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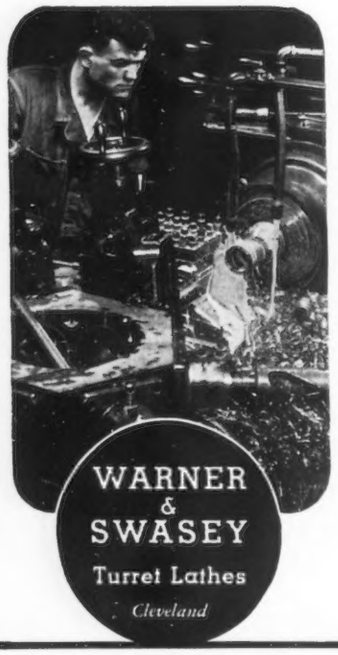
If this war is lost (and it is dangerously close to it) don't blame your soldiers and sailors—blame yourself. Not the man or woman in the next block or at the next machine or desk, but *yourself.* All wars are lost by the people back home who want somebody else to do the fighting, the dying, the sacrificing for them.

The fifth column that is sapping America's effort—sapping it perilously close to defeat—is less secret Axis sabotage than selfish American indifference. Read it any day in your paper . . . search for it every second in your heart—

—Lack of rubber may ground American planes—yet rubber is wasted by the ton on Sunday driving, trips to movies, card parties, anywhere to save a little energetic walking.

—Decisions vital to war must wait while politicians (not, thank God, the patriots among them) mend fences instead of mending holes in our country's armor.



—Pressure groups shout for curbs on inflation while pushing their own greedy demands that will cause inflation.

—The racetracks, bars and ballparks are packed with men and women "getting a little relief" from war work—"relief" that will mean fewer guns, planes and shells where and when they're needed. (We're very careful of our own "morale" . . . what about the morale of men in Australia, Libya, on the deadly seas?)

The list can go on and on. You know it. Each knows in which he's guilty. If you think you can keep your social gains, your profits, your ease, your comfort—if you think this can be somebody else's war, you're right—it will be Hitler's war. Isn't it better to face *your* responsibility *now* than to face a Hun-Jap firing squad next year?

OCTOBER 15, 1942
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THE IRON AGE

OCT. 15, 1942

ESTABLISHED 1855

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TODAY the uppermost subject at home and abroad seems to be that of a second front.

Columnists, commentators, communists and commoners, as well as ex-presidential candidates, are vociferously advising our military and naval war experts and our masters of global strategy when, where and how a second front should be established.

Although this fighting spirit on the part of the American people is a sign of healthy morale, it is also an indication that our people do not yet realize what the obstacles are in bringing about an immediate European offensive.

A successful war is nine-tenths preparation and one-tenth execution. We are just learning this lesson now, thanks to Hitler and Hirohito.

Because of the naive trustfulness of our government, which saw Germany and Japan begin the "arm-to-the-teeth" process nearly 10 years ago, American industry has to do in one year what these nations have been doing in 10 to prepare for war. If that is not what one might call an insuperable handicap, I do not know what you could call it.

Furthermore, while Germany, in particular, and Japan, in lesser measure, are fighting this war in their own backyards, America is forced to fight her war some three to eight thousand miles away from home.

Putting what we are up against in the form of an algebraic formula, the advantage in war varies directly as the time that you have to prepare for it, and the difficulty of fighting it after you *are* prepared varies as the square of the distance which you have to go to fight it. From this we get the ratio of difficulties standing against us as roughly 250 to 1. Ten to 1 against us in terms of preparation; 5000 average miles to bring us into action against 1000 miles for Hitler.

Under these conditions, to talk about establishing a second front abroad before we have completed that essential nine-tenths preparation on the industrial front is to invite defeat and welcome disaster.

J. H. Van Deventer

Inland Increasing War Production

New Blast Furnace to Add 1200 Tons of Pig Iron a Day

Only ten months have passed since ground was broken, and another Inland blast furnace is about ready to help America in this critical war of production. Designs were completed late last fall, and foundation work progressed rapidly throughout the winter months and early spring, despite all the difficulties of obtaining materials.

Steel erection was started before the summer began. Today, practically all the steel work is up—bricklayers are at work—and it is expected that the furnace will be making pig iron before snow flies. Iron from this new 1200-ton blast furnace will be used to augment and maintain Inland steelmaking operations.

This new blast furnace is only one of Inland's new construction projects. A new electrolytic tin plate plant, two additional blast furnaces for the Defense Plant Corporation, and a new mill water supply tunnel are also among the construction jobs well under way by Inland engineers to help assure the steel needed by America for ships, tanks, guns, shells, etc. While Inland engineers rush new work to completion, Inland steelmakers are breaking production records.

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Comparative Formability of Various Aluminum Alloys

By T. H. HAZLETT
Lockheed Aircraft Corp., Burbank, Cal.

. . . Some of the newer aluminum alloys, notably 61S and 53S, are being substituted for 24S Alclad and 52S in non-structural applications. An investigation, reported on herein, was carried out to determine the feasibility of fabricating these newer materials on existing tooling and to determine what tooling changes would be required.

EVENTS of the past year have accelerated a trend which was already started in the aircraft industry, towards substitution of some of the newer aluminum alloys, notably 61S and 53S, for 24S Alclad and 52S in non-structural application. (For chemical description of each alloy, see Table I.) An investigation was undertaken at Lockheed to determine the feasibility of fabricating these materials on existing tooling and to determine what tooling changes would be required.

The relative formability of 24S Alclad, 52SO, 53SW, and 61SW alloys was determined for the following methods of forming:

(1) Drawing on double-acting press
(2) Forming on drop hammer
(3) Stretch forming on double-acting press
(4 Forming shrink flanges on single-acting press with rubber punch

All tests on 24S Alclad were made on material in the "SO" or annealed condition, except the stretch forming tests which were made on both 24ST and 24SO material. Typical physical properties and composition of the various alloys are given in Table I. It will be noted that 53S and 61S were tested in the "SW" or "as quenched" condition only. This was done because it is felt that this is the most practical temper since it may be formed and used in the airframe without additional heat-treatment, thus decreasing fabrication cost and time. Table I shows that the strength is sufficiently high for most non-structural parts.

(1) DRAWING ON DOUBLE-ACTING PRESS:

These tests were made on a 6-in. diameter cylindrical bottomless die which was cast in Kirksite — an aluminum-zinc alloy which is cheaply worked and has proven very practical for drawing aluminum alloys.[1] The die was used in a hydraulic double-acting press capable of producing 125 tons on the punch and 45 tons on the hold-down. A schematic view of the die as set up in the press is shown in Fig. 1.

The relative formability of the various alloys was established for this operation by determining the maximum size blank which could be drawn into the die without failure. Blanks of 0.40 in. thickness were used for 52SO, 53SW, and 61SW, while 0.032 in. and 0.051 in. thick blanks were used for 24SO. After establishing the approximate limits by using rather large increments, the blank sizes were varied in steps of 0.40 in. on the diameter.

All tests were run using the minimum hold-down pressure required on the blank to prevent wrinkling. This minimum, or "critical" value of hold-down was used to avoid excess friction which would impose an extra restraining load and cause the part to fail at blank sizes smaller than the limiting values.

If the blank radius is expressed as (R) and the cup radius as (r), the ratio of (r/R) may be taken as an index of the severity of the forming operation. This means that the smaller the r/R ratio, the more severe is the forming operation since for a given cup radius, increasingly larger blanks may be formed.

TABLE I

Typical Mechanical Properties and Composition of the Alloys Tested

Alloy	f_{ty}	f_{tu}	Elongation in 2 In., Per Cent
24SO	10,000	26,000	20 (4.5 Cu, 0.06 Mn, 1.5 Mg)
24ST	45,000	68,000	19
52SO	14,000	29,000	25 (2.5 Mg, 0.25 Cr)
53SW	20,000	33,000	22 (0.7 Si, 1.3 Mg, 0.25 Cr)
61SW	21,000	35,000	22 (0.25 Cu, 0.6 Si, 1.0 Mg, 0.25 Cr)

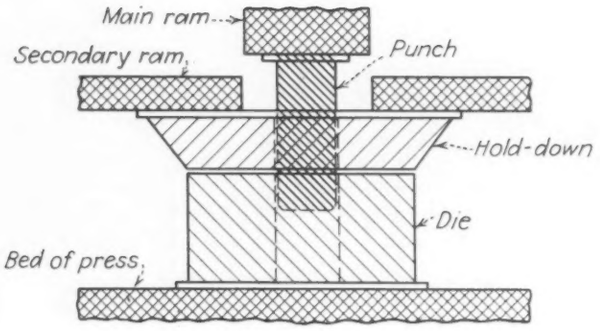

FIG. 1 — Schematic diagram of draw die used for cup tests.

Experimental results of these tests are shown in Table II and the limiting values of r/R are given in Table III. Since 0.032 in. and 0.051 in. thick blanks failed at the same value of r/R, it is assumed that this value is the same for 0.040 in. blanks and therefore comparable with the other alloys.

Fig. 2 shows the cups drawn from the various materials at their respective limiting r/R ratios. It may be noted that 24SO and 52SO are best, with 53SW slightly poorer, while 61SW is shown to be the least favorable of the four alloys and tempers under consideration for this type of forming.

(2) FORMING ON DROP HAMMERS:

No ideal method is known of comparing material used in drop hammer forming since a number of different types of parts may be made in this manner and a typical part may involve drawing, bending and/or stretching. Since some drawing is usually involved, and no drawing device is used except layers of plywood, wrinkles are usually set up which must be beaten out by hand during the forming operation. The mechanics and limitations of this type of forming are more fully discussed elsewhere[2], but the following factors must be considered in the present report:

(a) Ability of the material to draw into the die
(b) Wrinkling tendency of the material
(c) Ease with which wrinkles can be removed from the part
(d) An ability to withstand abuse from impact loads and hammer blows

The latter factor is difficult to define and cannot be tied down to any standard test although it appears to be a function of the ductility of the material.

A regular production part was selected for the purpose of comparing materials since practically all drop hammer techniques are involved in its fabrication. A view of the part as it comes from each operation is shown in Fig. 3; the final part (except for speed hammering) being shown in the lower right-hand corner. Although the production part is made from 24SO Alclad with three intermediate "quick anneals" at 670 deg. F., the tests herein described were run to determine the limits without such heat treating.

TABLE II

Drawing Data on Cylindrical Cups, One Operation Only

Blank Diameter	r/R	24SO 0.032 G*	24SO 0.032 B*	24SO 0.051 G	24SO 0.051 B	52SO 0.040 G	52SO 0.040 B	53SW 0.040 G	53SW 0.040 B	61SW 0.040 G	61SW 0.040 B
10.8	0.55	..	..	..	..	..	..	..	..	3	0
11.2	0.53	..	..	..	..	..	..	..	..	1	2
11.6	0.51	..	..	..	..	..	..	3	0	0	2
11.7	0.50	3	0	4	0	..	..	..	..	..	..
11.9	0.50	..	..	..	..	3	0	..	..	..	..
12.0	0.49	..	..	..	..	..	..	1	1	..	..
12.1	0.49	4	1	4	1	..	..	..	..	..	..
12.3	0.48	..	..	..	..	1	2	..	..	..	..
12.4	0.48	..	..	..	..	..	..	0	2	..	..
12.5	0.47	1	2	4	1	0	1	..	..	..	..
12.9	0.46	0	2	0	5	..	..	..	..	..	..
13.0	0.45	..	..	..	..	0	1	..	..	..	..

*G = Number of parts formed without failure.
*B = Number of parts which failed in forming.

The first operation involves drawing the part marked (1) by means of plywood rings which act as a kind of pressure pad and serve to reduce the amount of wrinkling. The second operation, marked (2), involves sharpening the corner radii and changing the angle of the sides. This is accomplished by setting the part in the second die and easing the punch down by stages, using rubber to help set the shape. A great deal of hand work is required during this process to prevent severe wrinkles from forming

TABLE III

Limits of Deep Drawing Cylindrical Cups

Material	Limiting r/R for Deep Drawing (One Operation Only)
24SO	0.50
52SO	0.50
53SW	0.51
61SW	0.55

TABLE IV

Formability on Drop Hammer

Order of Formability for Drop Hammer	Material
1	53SW, 61SW
2	52SO
3	24SO

which cannot be removed by speed hammering. The part is then sawed in half as shown in (3) to make a right- and left-hand section. The final operation on the hammer involves setting the angles of the sides as shown in (4). The same general procedure is used in this step as outlined for (2).

The limits to which the various alloys formed in this manner before failure are shown in Fig. 4.

All parts formed completely in the first operation die. The parts formed from 24SO broke in the corners as shown in the initial stages of the second operation, while 52SO cracked slightly on the final strike in the second operation die. Both 61SW and 53SW formed completely through the final operation.

Thus the alloys may be listed in the order of their formability *without* intermediate quick anneals (Table IV), the best being first. No distinction could be made between 53SW and 61SW.

No difference was apparent in the tendency of the various alloys to wrinkle. However, due to the

Fig. 2—Comparative depth to which various alloys can be drawn in one operation.

higher yield strength, wrinkles were more difficult to remove from 53SW and 61SW than from 24SO or 52SO.

(3) STRETCH-FORMING ON DOUBLE-ACTING PRESS:

Tests were run to determine the elongations obtainable by this method of forming as well as to ascertain the effect of various edge conditions on strain distribution and elongation of each alloy under consideration.

In this series of tests four strips 0.032 x 12 x 72 in. were sheared from 24SO, 24ST, 52SO, 53SW and 61SW, with the 72 in. dimension in the direction of rolling of the sheets. Two strips of each material were prepared with edges "as sheared" and two with sheared edges which were filed and then polished with crocus cloth to remove all notches and burrs.

Two-inch circles were then lightly scribed in a colored coating which was applied along the center line of each specimen. The circles were laid out from a template with 6-in. center-to-center spacing.

The surfaces of the strips were lubricated with a mixture of 600W grease and SAE 100-viscosity oil and stretched to failure on the large hydraulic double-acting press set-up shown in Fig. 5. Details of the set-up may be seen in Fig. 6. The supporting rails are placed at two sides of the punch (which is contoured to the desired shape) and the material rigidly clamped in place between them by means of the pressure plates which are actuated by the secondary ram of the press. The punch (attached to the main ram) is then lowered until the sheet conforms to the contour of the punch[3].

The specimens were placed in position in the press one at a time, each specimen being placed in the same location relative to the punch. Transverse and longitudinal deformation measurements were then

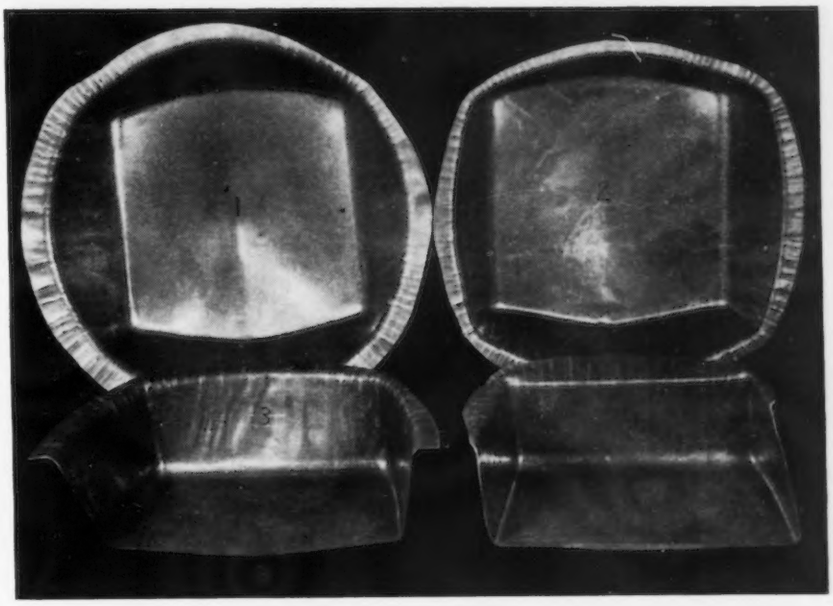

Fig. 3—Stages in the forming of a drop hammer part.

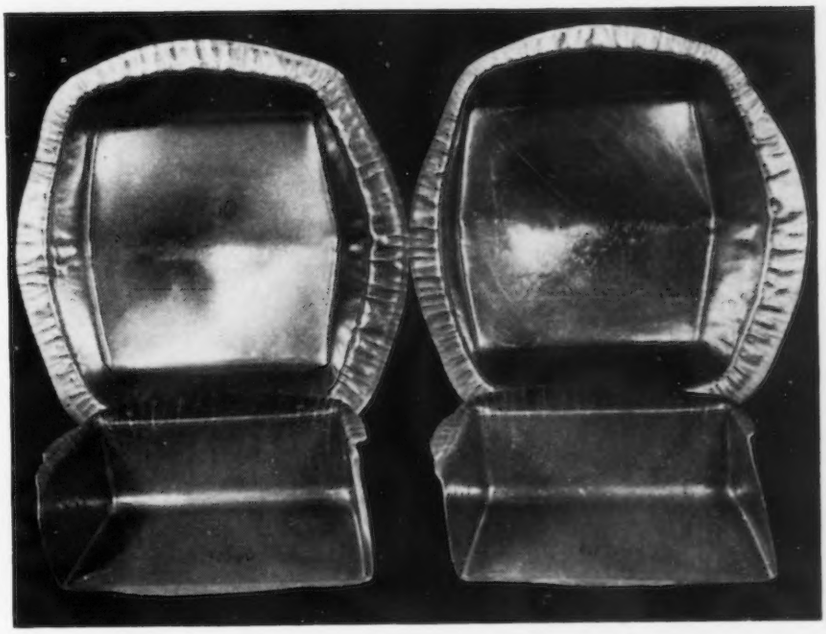

Fig. 4—Limits of forming various alloys on the drop hammer.

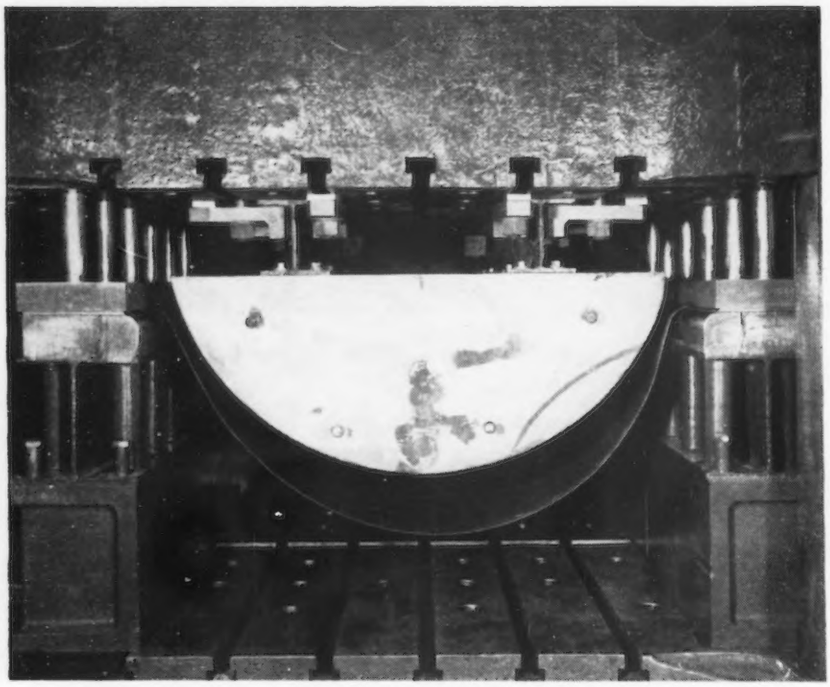

Fig. 5—Stretch punch and rails used for elonqation tests.

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made on the scribed circles after the strips were pulled to failure.

A summary of the longitudinal deformation data obtained is shown in Table V. Average elongation values in 42 in., as well as maximum, minimum, and average values of elongations obtained from 2-in. circles scribed along the specimen, are given. Distinction is drawn between values in the general area of the specimen and values very close to the point of fracture.

In this connection, it should be noted that elongation values obtained from a 2-in. gage length measured on standard tension coupons are not indicative of the elongations obtainable in stretch forming. The standard 2-in. elongation values obtained from the same sheets of material are summarized in Table VI together with the average elongation obtained in the 42-in. strips.

(4) Forming Shrink Flanges on the Rubber Press:

Four masonite form blocks were selected which form a convex or "shrink" flange (Fig. 7) on a part formed on the single-acting press using a rubber punch. The arc varied in radius from 6 in. for one block to 33.4 in. for the largest, so that any degree of compression could be obtained in the extreme fibers of the flange from 13 per cent to 2 per cent. All specimens had an arc at least 10 in. in length to eliminate any possibility of variable results due to edge effect on a narrow part.

Preliminary tests were run using one blank of each material on each block, forming a ⅜ in. wide flange. These were used to determine the range for each material. A new set of blanks were then prepared for the 16.5 in. radius block since the preliminary tests showed that parts formed on this block fell within the critical range for all materials. The compressive strains were varied by changing the flange width, since they are proportional for any given block radius. A total of six parts was formed from each material; two parts each with ½, ⅜, and ¾ in. flanges. All parts were formed in a high pressure central region of the press table[1].

Very little difference could be detected between the four alloys tested in this manner. All formed good parts on the block having an arc of 16.5-in. radius when ½ and ⅜ in. wide flanges were formed. Both 24SO and 52SO wrinkled slightly when a ¾ in. flange was formed. Less wrinkling was evident with 53SW and 61SW when the same flange width was formed. This slight difference is offset by the fact that both 53SW and 61SW have more springback which reduces the actual compression occurring in the outer fibers below the values imposed on the 24SO and 52SO parts.

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FIG. 6 — Schematic diagram of the press setup used in stretch forming.

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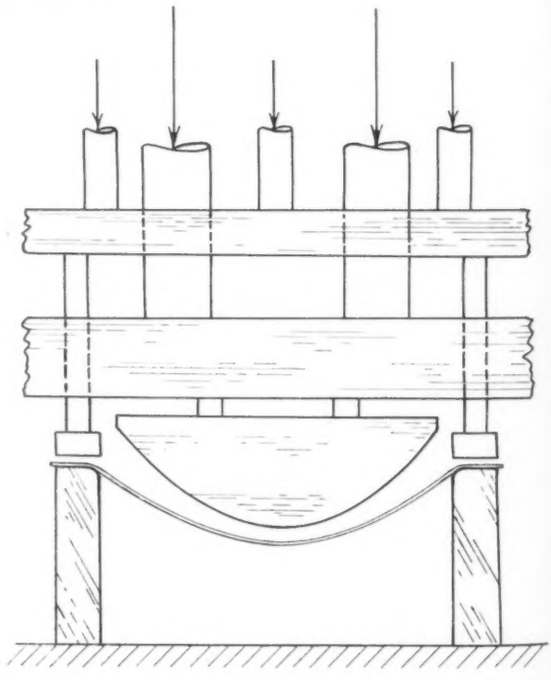
Discussion

Drawing on Double-Acting Press:

Although there is relatively little difference between the alloys under discussion when formed in this manner, as shown in Table II, the results shown refer to one operation only. The "ultimate" formability of the materials formed in this manner must be established by multiple-operation redrawing tests. Information obtained on this subject to date indicates that 52SO and 24SO are capable of more severe deformation than 53SW or 61SW.

Drawing and Forming on Drop Hammers:

Results given in Table IV refer to material which is formed with-



out any annealing operations and are not to be construed as the limits to which the material can be formed when heat treating is brought into the picture. The part shown in Fig. 3 is formed from 24SO Alclad in regular production at the present time by using three intermediate anneals at 670 deg. F. Other tests show that 52SO responds even more readily to this treatment. Although 53SW and 61SW do not respond to the same treatment, similar results can undoubtedly be obtained by re-heat treating at 970 deg. F.

In summary, 53SW and 61SW form further on the drop hammer without intermediate heat treatment but 24SO and 52SO can be made to form just as far by using intermediate heat treatment.

Stretch Forming on Double-Acting Press:

Using the elongation in 42 in. as indicative of the over-all elongation possible in stretch forming, it may be seen from Table V that 61SW, 53SW and 52SO have greater potentialities (as shown by results obtained from polished specimens) than 24SO or 24ST.

The difference between values obtained for the sheared and polished specimens may be used as an index of the edge condition sensitivity of the material. It may be noted from Table V that this difference is slight for 52SO and 53SW while the values of elongation are quite high. This fact is quite important in some cases, but the effect can be minimized in the majority of cases since the maximum strains usually occur in the central portion of the sheet rather than at the edges.

TABLE V

Longitudinal Deformation Data Obtained From 0.032x12x72 In. Strips

Material	Edge Condition	Average Elongation in 42 In.	Per Cent Elongation in 2 In. (Not Close to Fracture) Average*	Maximum	Minimum	Per Cent Elongation in 2 In. (Near Fracture)
53SW	Sheared	17.9	19.1	20.0	16.0	25.5
		16.1	16.5	18.6	14.8	21.9
	Polished	18.9	17.8	19.5	15.5	19.4
		16.8	18.6	20.0	17.0	29.0
61SW	Sheared	8.2	8.0	8.5	7.5	11.0
		8.7	8.8	9.5	8.5	10.0
	Polished	18.5	19.6	22.8	17.1	20.2
		17.6	17.9	19.6	14.1	18.0
52SO	Sheared	14.6	14.6	15.6	14.0	18.0
		16.3	16.8	18.0	14.8	18.6
	Polished	16.7	16.8	18.7	15.6	19.5
		16.5	16.3	18.0	15.5	18.5
24SO	Alclad Sheared	9.2	8.9	10.5	7.0	9.5
		14.8	15.7	17.2	14.2	16.3
	Polished	18.1	17.2	21.0	15.0	17.0
		10.7	10.9	12.0	10.5	12.0
24ST	Alclad Sheared	4.6	4.3	4.7	3.9	6.3
		0.2	0.1	0.5	0.0**	0.0
		5.0	4.8	5.0	4.5***	6.0
		11.5	11.8	14.0	9.5	14.0
	Polished	8.8	10.7	12.0	6.0	11.0
		9.7	9.8	10.6	8.5	9.2
		9.9	11.4	13.5	10.0	14.5
		13.3	13.3	14.5	11.5	15.5

* Average of 2-in. circles scribed along length of specimen.
** Serious notch on one sheared edge.
*** Incorrectly sheared—tapered 1/16 in. in 72 in.

TABLE VI

Average Deformations Obtained in Stretch Specimens and Standard Tensile Coupons

Material	Average Elongation in 42 In., Per Cent (From Stretch Specimens) Sheared Edges	Polished Edges	Elongation in 2 In., From Tensile Coupons, Per Cent (Average Values of Width and Cross-Grain)
61SW	8.5	18.1	20.5
53SW	17.0	17.9	18.8
52SO	15.5	16.6	22.6
24SO	12.0	14.4	19.1
24ST	7.0	10.4	17.3

Summary

(1) Maximum depth of draw in one operation can be obtained with 24SO and 52SO, while 53SW gives results almost as good. Somewhat less depth can be obtained with 61SW than with the others.

(2) Both 53SW and 61SW may be formed more severely on the drop hammer than 24SO or 52SO when no intermediate anneals are used; but the latter alloys can be made to form just as far by using intermediate 670 deg. F heat treatment ("quick anneal").

(3) 53SW and 61SW cannot be "quick annealed" to restore their forming properties. Apparently a complete re-heat treatment at 970 deg. F would be required.

(4) Maximum elongation can be obtained in stretch formed sheet from 61SW and 53SW. However, 52SO is well suited to this type of forming, having better elongation than 24ST or 24SO. Considerable reduction in elongation is obtained in 61SW and 24ST when the shear marks are not removed from the edge of the sheet. This is apparently not so critical with the other alloys.

(5) No material differences could be detected in the ability to form shrink flanges using a form block and rubber punch in the single-acting hydro-press.

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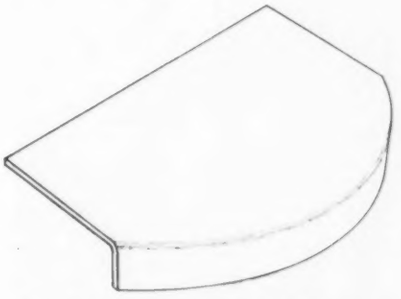

Fig. 7—Convex or "shrink" flange.

References

[1] "Drawing Dies for Aircraft Stampings," G. Brewer, THE IRON AGE, June 4, 1942.

[2] "Mechanics of Deep Drawing Sheet Metal Parts," G. Brewer and M. M. Rockwell, *Aero Digest*, February, 1942.

[3] "Stretch Forming Sheet Metal Aircraft Parts," T. H. Hazlett and M. M. Rockwell, THE IRON AGE, June 4, 1942.

[4] "Hydro-Press Forming with Rubber Platen," T. H. Hazlett and William Schroeder, THE IRON AGE, June 18, 1942.

Ordnance Redesigns to

AMERICA, with her immense resources of raw materials, today finds these resources taxed to the limit by the demands of the mightiest war in history. The situation has become so critical that the supply of many materials is fast dwindling. To circumvent actual shortages of fighting weapons, made in part or in whole from metals on the critical list, a conversion or reapportionment program is in full swing.

All fighting weapons used by the soldiers are developed and produced or procured by the Ordnance Department of the U. S. Army. More than a year ago Ordnance officers and engineers surveyed the situation, balanced prospective demand against known supply and listed the critical metals. They then proceeded to compile all ordnance items in the manufacture of which as little as one per cent of any of these critical metals was used.

At that time the critical or strategic metals were aluminum, magnesium, nickel and zinc, in the order given. However, this picture is changing constantly and today among the strategic metals are the following: Tin, magnesium, vanadium, nickel, primary aluminum, copper, tungsten, secondary aluminum, chromium, zinc, molybdenum, alloy steel, manganese, sheet and strip steel, structural and plate steel and steel castings. Many of these are considered critical and tight as to supply.

Since this initial effort, the Ordnance Department has set up a central organization which has re-surveyed the field and catalogued ordnance items containing any of these critical metals. Through extensive and intensive research and redesign, a great many of these items are now being made from other metals more abundant in supply or of alloys from which the critical metal or metals have been removed or reduced. Progress made in this reapportionment and conversion is one of the highlights of the war.

Conversion of fighting materiel is a particularly difficult task owing to the critical nature of the materiel itself. Failure of an item in use may be dangerous to the gun crew —might be the cause of the loss of a battle. To prove a design sometimes takes years of testing and when once established as correct it is difficult, sometimes impossible, to change materials without increasing the possibility of malfunctioning. Take for instance the various ammunition components. The design of these has been proved through many years of practice firing, simulated war maneuvers and recently in actual combat.

AN ordnance worker examines some 155-mm. shell which are ready for packing. Lower velocity shell, such as trench mortar shell, bombs and other projectiles not fired from rifled barrels, now use plastic fuses instead of aluminum. The aluminum windshields, or noses, of most armor piercing shell were substituted with steel which will effect a saving of millions of pounds of aluminum.

Ordnance Dept. Photo

From Brass to Steel

And yet, it was necessary to convert most of them. The conversion of the brass cartridge case to steel was an achievement of the highest order. Other countries lacking adequate supplies of copper and zinc had worked on this problem for years with indifferent success. America, with an abundance of both had never seriously considered this problem, but when it was finally tackled by Ordnance and industrial engineers a very satisfactory solution was arrived at in a few months. Estimates show that it will save this country 100,000,000 lb. of copper in 1942 and 591,000,000 lb. next year.

As an example of prodigality in the lush years the case of a machine gun might be cited, many parts of which were produced from chrome-vanadium steel simply to increase the quantity of that grade and make it available for the two or three parts for which an engi-

Free Critical Materials

. . . That the war effort is demanding the utmost of America's raw material resources is not news but what the Army itself is doing to conserve them is an interesting subject, thoroughly covered by the author. The major steps towards conservation of critical materials have been made by redesigning ordnance materiel to eliminate or reduce the amounts of the materials needed.

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By J. B. NEALEY

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neering requirement existed. An example of present frugality is the elimination of zinc coating on the corrugated sheet roofing and siding for War Department buildings in Panama and elsewhere. Today this material is protected with vitreous enamel which was a godsend to frit makers and factories with idle vitreous enamel furnace capacity.

Plastic Fuses

Fuses for high explosive shell, bombs, etc., constituted another field in which vast quantities of aluminum were saved. The fuses for the 60 and 81-mm. trench mortar shells were changed over from aluminum to plastics. Composed of three parts; body, head and booster cup; the first two were formerly machined from bar stock while the third was die cast.

It is estimated that more than 35,000,000 lb. of aluminum will be saved by this change through 1943. These items and some others took practically all the available thermosetting plastics capacity of this country. Regardless of this it would have been impracticable to make artillery fuses of this material as rotational and setback stresses set up when firing a high velocity, rifled bore gun are too great. Trench mortars, it should be explained, are smooth bore low velocity weapons for short range use.

Most armor piercing shot were equipped with aluminum noses called windshields to provide the proper ballistic characteristics. Steel has been substituted, effecting a saving of millions of pounds of aluminum. Another fuse in the works for a total of 95,000,000 was formerly machined from bar aluminum, but by changing over to die casting and employing secondary aluminum, the primary aluminum is retained for other uses. More than 32,000,000 lb. in weight of scrap aluminum will be saved annually by using die casting in the place of machining.

In addition, several advantages accrue from the substitution of die casting for machining from bar stock. First, secondary aluminum can be used in the place of the more critical primary aluminum which is badly needed in the airplane industry where secondary is unusable. Second, there is a scrap loss of from 30 to 300 per cent when machining from bar stock as contrasted with only 10 per cent with die castings. The bar stock scrap immediately becomes secondary while at least half the die cast scrap can be put back in the pot. Most parts can be cast to shape with little or no machining required. This saves machining manpower and machine tools, both of which are critical items.

It is recognized that the physical properties of parts cast from secondary metal are not up to those machined from primary bar stock and the difference is enough to affect the essential military characteristics of the parts so connected. In some instances a slight redesign of section will make the item in question suitable for die casting in secondary metal. To insure the greatest possible strength and soundness, the Ordnance Department requires that only those machines using pumps for forcing the metal into the dies under high pressure be used.

Substitution for aluminum parts, which are already mandatory, can be briefly summarized as follows:

Ammunition	73 parts of 44 major items
Artillery	111 parts of 17 major items
Small arms	91 parts of 28 major items
Tank and combat vehicles	141 parts of 4 major items

These substitutions are estimated to save 48,700,000 lb. of primary aluminum during 1942, with an increased requirement of about 9,000,000 lb. of secondary aluminum, and for 1943 approximately 120,000,000 lb. of primary aluminum with an increased requirement of about 23,000,000 lb. of secondary aluminum.

One type of gun mount (90 mm.) was redesigned to replace aluminum plates by ribbed steel, thereby saving millions of pounds of aluminum. These are but a few of the conversions already in effect and many more are still in the research and experimental stage.

It will be noted in reviewing the above that these methods were followed in aluminum conservation program: (1) Substitution of a different material or metal, and (2) the employment of die casting in the place of machining bar stock,

U. S. Army Signal Corps Photo

RUBBER, which has become so critical, has been reduced by 85 per cent in the construction of tracks for light and medium tanks alone and has been eliminated from their interior padding. Many other items such as gun recoil pads, hose, gaskets, shell grommets, etc., have had their rubber content cut to the irreducible minimum.

which permitted (3) the use of secondary instead of primary aluminum.

Early this year and based on conditions as they existed, the *Aluminum Report* by the Joint Aluminum Committee of the Army and Navy Munitions Board and the War Production Board, estimated the requirement of aluminum for the Ordnance Department through 1943, but due to further substitutions, and taking into account increased production, it is estimated that these requirements will be reduced through 1943 by 86,536,000 lb. while possible savings of 155,836,000 lb. are indicated. This is a good bit out of the total estimate.

Big Reductions in Rubber

While rubber is not a metal it might be mentioned here, that it is so critical that already two-thirds of the crude rubber used in the manufacture of the light and medium tanks has been eliminated. The amount of rubber used on the tracks of the light tanks alone has been cut by 85 per cent. Steel tracks are being substituted. Rubber has been eliminated from interior padding. Tires for army vehicles were subjected to a research program which resulted in a new method of construction requiring considerably less rubber. Many other items such as gun recoil pads, hose, gaskets, tank helmet padding, ammunition adhesive tape, shell grommets, etc., have had their rubber content cut to the irreducible minimum, all of which adds up into an important figure.

Efforts at conserving tin, all of which is imported, have proved very satisfactory. To eliminate static electricity, smokeless powder containers with tinned copper liners were formerly employed. A stainless steel liner (18 per cent chromium) has now been substituted. This weighs but 3.87 lb. as against 12.6 lb. for the old. Zinc coated and enameled liners have been substituted for tin plate in ammunition boxes. The tin plate ends of fiber containers have been replaced with galvanized iron and painted steel. Manufacturers of ink used in marking ammunition have been directed to put their product up in containers of some material other than tin plate. Some items of tin bronze are now made from silicon bronze.

Further Reductions in Tin

Many fuses were formerly packed in terne or tin plate containers but orders have been issued to make these boxes of lacquered black sheet steel from now on. There are some 200 types and sizes of bronze bushings and glands containing, on an average, approximately 10 per cent tin. Experiments are being conducted to make these with tinless bronze or steel which will save more than 100,000 lb. of tin annually. By reducing the thickness of the coating of terne plate from 15 lb. to 2 lb. per base box and decreasing the tin in solder, savings of tin in packing boxes for small arms ammunition will amount to 1,450,000 lb. in 1942 and 3,100,000 lb. in 1943. In addition to the above savings, fiber containers will shortly be introduced eliminating entirely the use of tin in packing small arms ammunition. It is estimated that this will effect an additional saving of some 5,000,000 lb. of tin in 1943,

bringing the total for that year up to 8,100,000 lb.

Two of the largest ordnance items, both as to quantity and weight, are forgings and steel castings. Until recent years all cannon barrels or tubes were forged but some years ago the Ordnance Department adapted centrifugal casting to this purpose and today gun barrels from 1 to 5 in. are made by this method. In spite of this, forge shops and cast steel foundries are overtaxed. On the other hand the stamping industry is begging for war contracts and ordnance engineers are making every effort to redesign some of these parts. This program is by no means an easy one as these engineers have set up for themselves a study for each item which involves the following factors:

1. Production quantity
2. Machine load and capacity of present and proposed methods
3. Functional standards maintained
4. Engineering testing and proving

These engineers consider that modern stamping such as forming, drawing and embossing combined with brazing and welding together with high tensile steels offer an opportunity in redesign, not only of employing the stamping industry but also of effecting savings in scrap and weight and increasing production.

One item changed over to steel stamping was the aluminum windshield (for armor piercing shot) already mentioned. Several parts of bombs such as tail fins, nose and tail plugs, fin lock nuts, adapters, etc., are now made from steel stampings.

Malleable Iron for Forgings

In an effort to reapportion the load as between forging and malleablizing capacity, many parts of our machine guns are now made from malleablized castings, thus replacing a large quantity of steel forgings, increasing machine gun production and saving machine tools and machining time.

The vast tank program has loaded steel foundries with orders for cast armor plate. These orders on top of the increased requirements for steel castings for artillery, tank and combat vehicles and other applications put steel castings well up on the critical list.

Nickel and chromium have also been drastically reduced in armor plate and further cuts are planned. Vanadium is another metal that has come in for its degree of elimination in armor plate.

Bullet Core Changes

As an example of how the unexpected development of critical spots change a program while it is still in progress we might cite armor piercing bullet cores (small arms). These cores are machined from a steel high in the critical metal tungsten. Seeking a substitute steel, ordnance engineers developed a grade of steel with essentially the same ballistic qualities as the tungsten steel. This was produced in electric furnaces, but about this time electric furnace steelmaking capacity became critical. The project was then switched in an endeavor to ascertain whether the same steel could be made equally as well in open hearths. The answer was "yes." Then centerless grinding capacity for grinding the rod stock became choked and the project was reopened to prove that normal cold drawn bars could be used without centerless grinding. This was accomplished by some slight changes in tooling. Increased production also resulted from this change.

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CANNON barrel from 1 to 5 in. are now produced by centrifugal casting which has done much to relieve the load on forging facilities.

Ordnance Dept. Photo

How to Select

FIG. 1—Overhead welding with E-6010 electrodes on the Westinghouse atom smasher, a pressure vessel designed to operate at 120 lb. per sq. in. air pressure

THE proper choice of electrode for any welding job must be based on a number of factors such as (1) physical properties of the resultant joint, (2) weldability and (3) deposit rate.

The physical properties of the welded joints are of primary importance in determining the life and serviceability of the structure. The weldability determines the ease with which the welding operator can make the welds, which in turn has an important bearing on the quality of the welds made and the speed or cost of the welding. The deposit rate of an electrode directly affects the speed and cost of welding.

The proper choice of welding electrodes is of primary importance, therefore, and the selection should only be made after careful consideration of all the necessary factors. There are many types of electrodes available, consequently, unless their characteristics are thoroughly known it is difficult to determine the proper type to use. It is the purpose of this article to discuss the characteristics of some of the most commonly used low carbon steel grade electrodes in order to aid the welding engineer and designer in selecting the proper electrode for a given job.

Every electrode manufacturer makes a number of different types. The more common types of flux coated, low carbon steel electrodes, the ones considered in this article, may be grouped into six classes as listed in the A.W.S.-A.S.T.M. Tentative Specifications for Iron and Steel Arc-Welding Electrodes. These classes are listed in Table I.

Tentative Specifications for Iron and Steel Arc Welding Electrodes, Serial Designation: A 233-42T, Issued 1940, revised 1942, were prepared jointly by the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, and the American Welding Society, 33 W. 39th Street, New York.

Examination of Table I reveals several important facts:

(1) Four classes of electrodes are suitable for welding in all positions; one class is suitable for welding horizontal fillet welds and flat position welds; and one class is suitable for welding in the flat position only.

(2) Some classes are suitable for use on d.c. only, some on a.c. only, and some on both a.c. and d.c.

(3) The minimum tensile strengths and yield points developed from all weld metal specimens are identical.

(4) The ductility in the stress relieved and non-stress relieved conditions respectively as measured by the elongation in 2 in. of all weld metal tensile specimens is 27 and 22 per cent for the E-6010 and 12 classes, 22 and 17 per cent for the E-6012 and 13 classes, and 30 and 25 per cent for the E-6020 and 30 classes.

Table I does not, however, give any indication of the other fundamental differences between the electrodes such as arc characteristics, coating and slag characteristics, melting rate, etc. It is these special characteristics that are partly responsible for the six different classes of low carbon steel electrodes.

The E-6010 and E-6011 electrodes are all-position type electrodes capable of producing the highest ductility welds in the horizontal, vertical and overhead positions. The reason for having the two classes is obvious from their description in Table I; E-6010 is useful with d.c. reverse polarity only, and E-6011 is useful with a.c. only.

It would be highly desirable if these electrodes would operate satisfactorily on both a.c. and d.c.; then they could be combined into one class. The nature of the E-6010 coating which is high in cellulose is such that it will not operate properly on a.c. or straight polarity d.c. The nature of the E-6011 coating is such that it will operate on both a.c. and d.c. but unfortunately the quality of the weld deposits obtained when using d.c. will not meet the minimum specified requirements. It may be expected in the future, however, that electrode coatings will be developed that will accomplish the desired results on both a.c. and d.c.

The E-6012 and E-6013 electrodes are position type electrodes, both of which will operate on a.c. The E-6012 electrode will operate satisfactorily on d.c. and in such cases is usually used on straight polarity. Although the E-6013 electrode is

Arc Welding Electrodes

stated to be used usually on a.c., it is important to point out that it will also operate on d.c. in which case it is usually used on straight polarity.

Inasmuch as the E-6010 and E-6011 classes of electrodes cover d.c. and a.c. welding, they are all-position electrodes the same as the E-6012 and E-6013 electrodes, and they produce deposits with the same minimum tensile strength but higher ductility, the logic of having E-6012 and E-6013 classes of electrodes might be questioned.

The answer lies in the weldability of the electrodes and the melting rates. The melting rate of the E-6012 and E-6013 electrodes is higher than the melting rate of the E-6010 electrode. This means faster welding speeds. The penetration produced by the E-6012 and E-6013 electrodes is less than that produced by the E-6010 electrode, consequently they are more suitable for use on joints having a poor fit up. That lower penetration often makes it possible to use larger diameter electrodes on a given plate thickness, which in turn results in greater welding speeds.

The E-6030 and E-6020 electrodes are suitable only for flat position, and flat position and horizontal fillet welding respectively. They both operate satisfactorily on a.c. and d.c. and produce higher ductility values than any of the other E-6000 classes of electrodes. Electrodes of these classes have a slag type coating, produce deep penetration, a heavy slag covering on the weld deposit, and have higher melting rates than the other classes of electrodes. In addition, smoother weld surfaces are obtained with these electrodes than with the other types.

. . . The selection of the proper electrode to use on low carbon steel structures is dependent upon physical properties, position of welding, weldability, speed of welding, etc. A comparison of six AWS classes of low carbon steel arc welding electrodes is made in an effort to aid the design and welding engineers in selecting the most suitable electrode for each job.

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Why an E-6030 Electrode?

The logic in having an E-6030 class electrode when the E-6020 class produces the same physical properties and operates both on a.c. and d.c., might be questioned. The primary reason is that the E-6030 electrode generally gives a slightly heavier slag deposit than the E-6020 electrode, which results in

TABLE I*

Electrode Classification No.	Capable of Producing Satisfactory Welds in Positions Shown	General Description	Treatment of Welded Specimen	Tensile Strength, Min., Lb. Per Sq. In.	Yield Point, Min., Lb. Per Sq. In.	Elongation in 2 In., Min. Per Cent
E-6010	F, V, OH, H	Heavy coated useful with d.c. elec. positive only.	S.R.	60,000	47,000	27
			N.S.R.	62,000	52,000	22
E-6011	F, V, OH, H	Heavy covering, useful with a.c. only.	S.R.	60,000	47,000	27
			N.S.R.	62,000	52,000	22
E-6012	F, V, OH, H	Heavy covering, usually used with electrode negative, d.c. or on a.c.	S.R.	60,000	47,000	22
			N.S.R.	62,000	52,000	17
E-6013	F, V, OH, H	Heavy covering usually used on a.c.	S.R.	60,000	47,000	22
			N.S.R.	62,000	52,000	17
E-6020	H-Fillets, F	Heavy covering, usually used with elec. negative or a.c. for fillets and elec. positive or a.c. for flat welding.	S.R.	60,000	47,000	30
			N.S.R.	62,000	52,000	25
E-6030	F	Heavy covering, usually used with elec. positive on d.c. or with a.c.	S.R.	60,000	47,000	30
			N.S.R.	62,000	52,000	25

F = flat; V = vertical; H = horizontal; OH = overhead; S.R. = stress relieved; N.S.R. = not stress relieved.
* Reproduced from AWS-A.S.T.M. Tentative Specification for Iron and Steel Arc-Welding Electrodes.

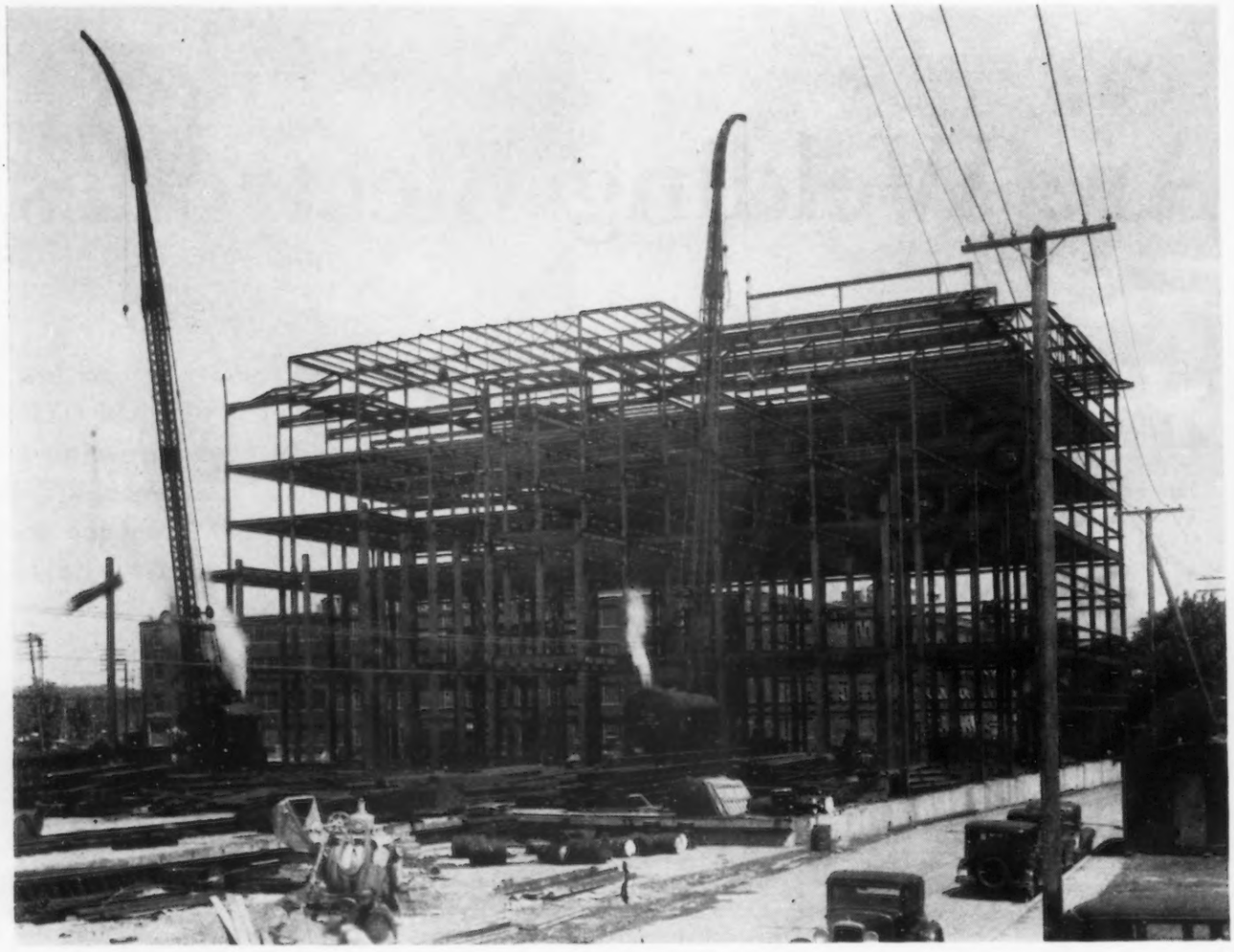

FIG. 2—This 5-story warehouse completely arc welded with Class E-6012 electrodes is an extension to the Mansfield works of the Westinghouse Electric & Mfg. Co. and has a floor space of 300,000 sq. ft.

better coverage of the deposit and a smoother weld. The slag produced by the E-6020 class of electrode also may have a slightly higher melting point in order to aid in depositing horizontal fillet welds, a condition which results in more pronounced surface ripples on flat position welds.

The design of most E-6020 electrodes, however, is such that the slag coverage and the weld surface appearance are entirely satisfactory. As a result there are many makes of E-6020 electrodes used for flat position welding. The advantage in using the E-6020 electrode lies in the fact that it can also be used for horizontal fillet welds; thereby eliminating the necessity of stocking two classes of electrodes when both flat position welding and horizontal fillet welding are required in production.

Before leaving this general discussion on electrodes it is important to point out that many electrodes classified as E-6012 will produce tensile strengths in excess of 72,000 lb. per sq. in. This being the case they are sometimes also classified as E-7012 electrodes. Strictly speaking, however, this classification might be questioned because the E-7000 classes of electrodes are intended to be alloy electrodes and not plain low carbon electrodes.

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TABLE II

Typical Melting Rates of E-6010 Electrodes

Electrode Diameter, In.	Melting Rate, Oz. Per Hr.
1/8	41.4
5/32	51.1
3/16	66.0

Application of E-6010 Electrodes

This class of electrode is suitable for use on reverse polarity d.c. and for welding in all positions, and produces the highest quality of weld. The electrode coating is commonly referred to as a cellulose type and the resultant slag covering the deposit is thin and easily removed. The electrode produces deep penetration and has a relatively slow melting rate. In operation the deposited metal freezes rapidly, resulting in a pronounced rippled surface. The thin slag covering, slow melting rate, and rapid solidification characteristics account for this type of electrode's suitability for all position welding.

Typical melting rates of electrodes of the E-6010 class are given in Table II.

The principal application of the E-6010 electrode is for position welding of the highest quality wherever d.c. welding machines are

available and where ductility or soundness requirements cannot be met with other types. It can be used for horizontal fillet and flat position welding but because of economic reasons resulting from its slow melting rate it is better to use E-6020 or E-6030 class electrodes in such cases.

Typical applications are pressure vessels, pressure piping, storage tanks, ships, barges and miscellaneous machine construction.

Fig. 1 shows overhead welding with E-6010 electrodes on the Westinghouse atom smasher.

Application of E-6011 Electrodes

The E-6011 electrode is designed for use on a.c. and because the quality of the welds obtained is equivalent to that produced with E-6010 electrodes it is used in place of them when a.c. welding machines are available. The slag produced by the coating is somewhat heavier and slightly more fluid than that produced with the E-6010 type electrodes.

The nature of the electrode coating is such that somewhat higher welding currents can be used and the melting rate of the electrode is higher than in the case of the E-6010 electrodes. Consequently, it is more economical to use on flat position welds and horizontal fillet welds.

The fact that this electrode is designed especially for a.c. welding does not mean that it cannot be used on d.c. When used on d.c. the best results are obtained on straight polarity. The ductility and soundness of the weld when used on d.c. are likely to be somewhat lower than when used on a.c., consequently particular care must be taken to restrict its use on d.c. when the highest quality welds are required.

This class of electrode is relatively new to industry but it undoubtedly will find a wide application on pressure vessels, ships, pressure pipe lines, storage tanks and machinery construction of all types.

Application of E-6012 Electrodes

This class of electrode is designed for use on a.c. or d.c. When used on d.c., however, straight polarity is generally employed. The rutile type coating used on this class of electrode makes it ideal for all position welding on structures where welds of high strength and moderate ductility are desired.

The deposited metal is more fluid than that produced with E-6010 electrodes and the slag covering is heavier and more fluid. The welding characteristics are excellent in all positions. Horizontal fillet welds and flat position welds have a relatively smooth surface with less pronounced ripples than is the case with E-6010 electrodes.

TABLE III

Typical Melting Rates of E-6012 Electrodes

Electrode Diameter, In.	Melting Rate, Oz. Per Hr.
1/8	51.2
5/32	65.4
3/16	85.6
1/4	134.5

The E-6012 electrode is designed to carry high current densities; consequently relatively high melting rates and welding speeds can be obtained. Typical melting rates of E-6012 electrodes are given in Table III.

Comparison of the melting rates given in Tables II and III indicate that the E-6012 electrode has approximately 25 per cent higher melting rate than the E-6010 electrode.

Another outstanding characteristic of the E-6012 electrode is the low penetration obtained. This feature makes the electrode especially adapted to the welding of joints with poor fit-up because it readily bridges gaps and eliminates the danger of burning through. This low penetration characteristic also makes it possible to use larger diameter electrodes on thin plates than is possible with some of the other classes of electrodes because there is less tendency to burn through the plates. Increasing the electrode diameter speeds up the rate of welding.

The distortion produced in a welded structure is a function of the deposited metal shrinkage and the heating of the base metal adjacent to the welds. The low penetration characteristics of the E-6012 electrode hold the base metal heating to a minimum and consequently produce less distortion than E-6010, E-6020 and E-6030 class electrodes.

Electrodes of this class have found wide application on pipe lines, barges, ships, storage tanks, building structures, machinery, miscellaneous equipment and general repair work.

Fig. 2 shows a five-story ware-

FIG. 3—Class E-6013 electrodes have been used on this sheet metal housing.

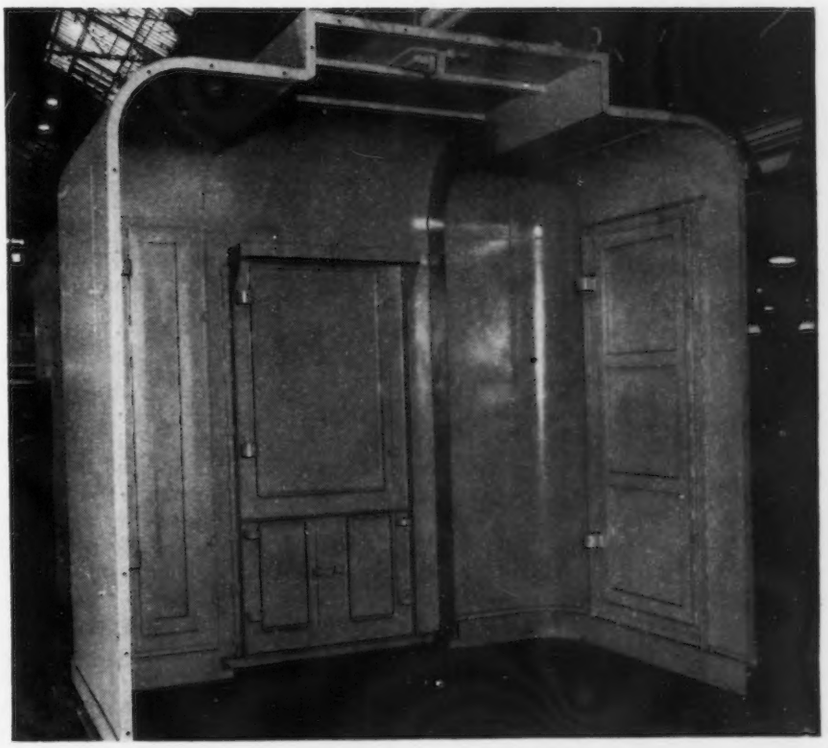

FIG. 4—When welding large pieces like this 2000 ton press bed, it is best to manipulate the piece so that the work can be done in a flat position.

house completely arc welded with Class E-6012 electrodes.

Application of E-6013 Electrodes

The characteristics of the E-6013 electrode are similar to the E-6012 electrode. This type of electrode is designed to have exceptional stability on a.c. and is generally not used on d.c. It will, however, operate satisfactorily on d.c. and in such cases straight polarity is generally used.

Some electrodes of this class are designed to operate at very low welding current, a condition which makes them especially adapted to the welding of thin gage metals.

Typical applications for such electrodes are sheet metal work, light gage gear cases, light gage machine housings, auto fender repair work, etc.

The fact that some E-6013 electrodes are particularly adapted to light gage metal welding does not mean that they cannot be used on heavier materials. In many applications the E-6013 electrode is used as an alternate to the E-6012 electrode.

Fig. 3 illustrates the application of E-6013 electrodes on a sheet metal housing.

Application of E-6020 Electrodes

This class of electrode contains a heavy slag type coating and is designed for horizontal fillet and flat position welding with either a.c. or d.c. equipment. The slag deposit on the weld is heavy and very fluid, and the weld surface is generally smooth and uniform.

The characteristics of the electrode coating are such that very high currents can be used for a given electrode diameter and the result is deep penetration, high melting rate and welding speed. In addition, the fluidity of the deposited metal and slag covering is such that this class of electrode is not suitable for use in the vertical and overhead positions.

The ideal applications for E-6020 electrodes are flat position, groove and fillet welds and horizontal fillet welds. When welding with a d.c. power source, reverse polarity is generally recommended for flat position welding and straight polarity for horizontal fillet welding. The use of reverse polarity for flat position welding results in a slightly more fluid slag which aids in producing a smoother weld surface and higher sidewall wetting, thereby producing a concave weld surface. The increased slag fluidity resulting from reverse polarity causes some sagging of the deposit when making horizontal fillet welds, a condition which does not occur when straight polarity is used. If horizontal fillet welds are to be made with reverse polarity, satisfactory control of the fillet shape can generally be obtained by using

slightly lower welding currents than would be used with straight polarity.

Typical melting rates of E-6020 electrodes are given in Table IV. Examination of this table indicates melting rates of 14 to 30 per cent higher than those of the E-6012 electrode and 48 to 65 per cent higher than those of the E-6010 electrodes.

The excellent all-around characteristics of the E-6020 electrode make it adaptable to all types of structures such as machinery, pressure vessels, pressure pipes, ships, etc., where flat position and horizontal fillet welding can be done.

Many manufacturers find it economical to purchase positioning equipment so that parts may be welded in the flat position. In such cases the additional equipment expense or time involved in positioning the work is more than offset by the increased welding speed obtained and the larger diameter electrodes that can be used. On many structures 5/16 in. and even 3/8 in. electrodes are used in the flat position.

Fig. 4 illustrates flat position welding with E-6020 electrodes on the bed of a 2000 ton press.

Application of E-6030 Electrodes

This class of electrode is designed for use on a.c. or d.c. in the flat position only. When d.c. is used the electrode is generally positive (reverse polarity).

The welding characteristics of this class of electrodes are similar to those of the E-6020 class. The slag covering on the deposit is generally more fluid and more abundant than is the case with E-6020 electrodes. The result is somewhat better slag coverage on the final pass of a weld, smoother surface appearance and slightly higher side wash of the bead in the bottom of a groove. The fluid slag characteristics make it unsuited for horizontal fillet welding.

Structures on which this electrode is applicable are identical to those on which the E-6020 electrode is applicable.

TABLE IV

Typical Melting Rates of E-6020 Electrodes

Electrode Diameter, In.	Melting Rate, Oz. Per Hr.
1/8	61.5
5/32	84.6
3/16	100.5
1/4	153.6

Summary

When selecting low carbon steel electrodes of the E-6000 series four factors must be considered: (1) quality of weld, (2) position of welding, (3) speed or cost of welding, and (4) type of welding machines (a.c. or d.c.).

The E-6010 electrode is suitable for all position welding of the highest quality and is used on d.c. welding machines. Because of its relatively slow melting rate it is generally not economical for use on horizontal fillet welds or flat position welding although satisfactory quality welds can be made.

The E-6011 electrode is suitable for all position welding of the highest quality and is used on a.c. welding machines. The choice between the E-6010 and E-6011 electrode is determined primarily by the type of welding equipment available.

The E-6012 electrode is suitable for all position welding on either a.c. or d.c. It produces welds of high tensile strength and moderate ductility. Its moderate penetration characteristics and high melting rate make it applicable for general construction work. It is particularly suitable for joints having a poor fit-up and for horizontal fillet welding.

The E-6013 electrode is suitable for all position welding and is generally used on a.c. It produces welds equivalent in properties to the E-6012 electrodes and may be used on the same types of structures. Some makes of E-6013 electrodes are especially adaptable to thin gage steel welding.

The E-6020 electrode is suitable for horizontal fillet welding and flat position welding. It can be used on a.c. or d.c. equipment and produces welds of the highest quality. Because of the high melting rate, and excellent appearance and quality of welds made with the E-6020 electrode, it has generally been found economical to position the structures to facilitate flat position welding with this class of electrode.

The E-6030 electrode is suitable for flat position welding only. It can be used on a.c. or d.c. equipment and produces welds of the highest quality. Applications for this electrode are similar to those of the E-6020 class. The very fluid slag makes it especially suitable for applications where the weld appearance is important. In some cases this electrode is used to make the final pass of a weld otherwise made with E-6020 electrodes in order to obtain the benefit of the resulting surface appearance.

o o o

Effects of Notching on

THE first part of this abstract was concerned primarily with correlating existing experimental data, with particular attention to the work of Kuntze. Some variations in properties at high and low temperatures were reviewed, along with several paragraphs on the effects of additional bending. Before attempting to arrive at a practical conception of cohesive strength it might be well to investigate the distribution of stress on notched tensile test specimens.

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o o o

Numerous attempts have been made to determine the effect of notches, holes, etc., on the stress distribution caused by elastic loading.

The maximum value of longitudinal stress, or "stress peak," which is created by elastic straining of round and flat bars of infinite width and provided with notches of hyperbolic profile has been calculated by Neuber[31]. This stress peak at the notch bottom is given by the expressions:

for round bars:

$$S_{max} = S\sqrt{\frac{d}{r}}$$

for flat bars:

$$S_{max} = 1.3\,S\sqrt{\frac{d}{r}}$$

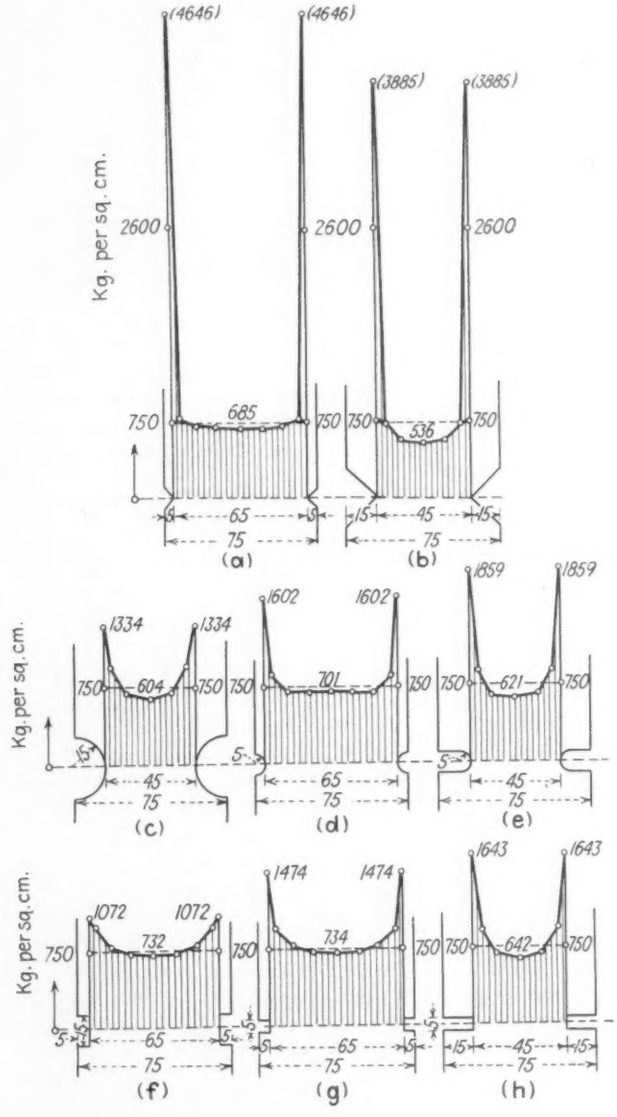


FIG. 16 — Distribution of longitudinal stresses in flat steel tensile test bars provided with notches of various shapes. (After Preuss.)

o o o

where S is the average tension (load divided by the area of the notched section), r is the radius at the notch bottom (apex of the hyperbola), and d is the diameter or width of the notched section. These formulas, however, assume infinitely large bars and therefore approximate only those conditions created by very deep notches.

A few elastic measurements on flat steel bars with semi-circular notches have been carried out by Preuss[32], Fig. 16, and by Coker and Filon[33]. Their results are in good agreement with those derived from photoelastic measurements.

The effects of various factors, such as radius of notch, notch depth, etc., have been investigated by means of photoelastic measurements on flat bars of a transparent material, such as Bakelite, by Coker and Filon[33], Frocht [34], and Wahl and Beewkes.[35] The following types of notches have been investigated:

(a) V-notches of constant depth, having various bottom radii, Figs. 17 and 18,

(b) Semi-circular notches of various radii, Figs. 19 and 20,

(c) Slot notches of various depths and widths having a half-circular bottom contour, Figs. 21 and 22.

For the first two types of notches, the distribution of the lateral stress has also been determined, Figs. 17 and 19.

The last type of notch should approximate the practical conditions in notched bar tensile tests, where the notch is usually a V-notch with a constant bottom radius. The measurements by Frocht are re-plotted in Fig. 22 for a bar of given thickness (= 100 per cent) and provided with notches of given bottom radii and varying depths. The stress concentration factor, *i. e.*, the ratio between the peak stress and the average longitudinal stress in the notched section, increases at first with increasing notch depth, then goes through a maximum, and finally decreases again toward the value of one, which indicates a uniform stress distribution, for a notch

Strained Metals . . .

which removes 100 per cent of the cross-sectional area. The maximum value of stress concentration factor occurs for a notch depth of somewhere between 20 and 50 per cent, this depth being larger for the sharper notches.

X-Ray Photoelastic Study

Regarding the transverse stress, photoelastic measurements indicate that for shallow notches a high but localized transverse stress is present in the same region as the longitudinal stress peak, Fig. 17, while a more uniformly distributed transverse stress exists in a deeply notched section, Fig. 19. The transverse stress is always zero at the notch bottom, as required by conditions of equilibrium.

Experiments regarding the stress distribution in round bars have been carried out by Berg[36] on rubber and by Kraechter[37] on steel bars by means of X-rays. Both investigators agree, according to Fig. 23, that, with a notch of a given bottom radius, the stress concentration increases at first with increasing notch depth; however, the X-ray method, contrary to the rubber test, shows a maximum stress concentration for a rather shallow notch and an increasingly uniform stress distribution with further increasing notch depth. These results are in qualitative agreement with the photoelastic measurements on flat bars.

. . . The second and concluding part of an abstract prepared to correlate the experimental evidence relating to notch effects in tensile specimens. Herein the authors discuss stress distribution and some conceptions of cohesive strength.

RIGHT

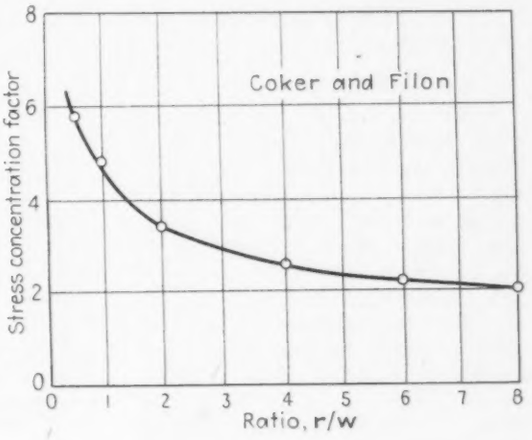
FIG. 18—The effect of bottom radius on stress concentration in the bar shown in Fig. 17, above.

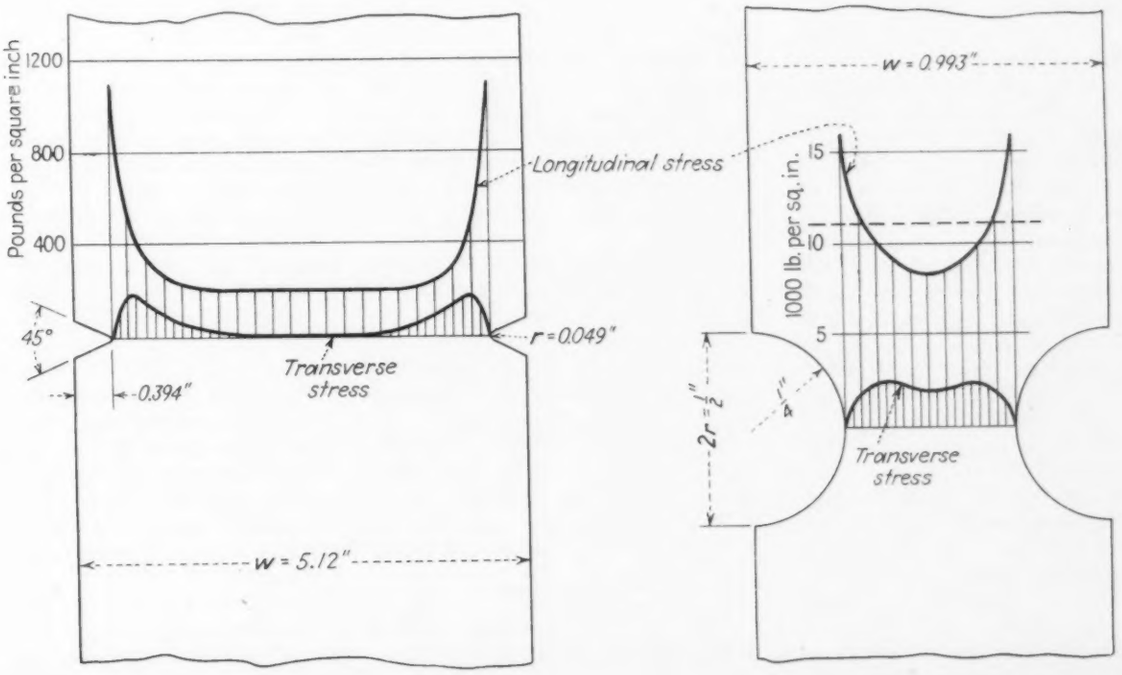
LOWER RIGHT

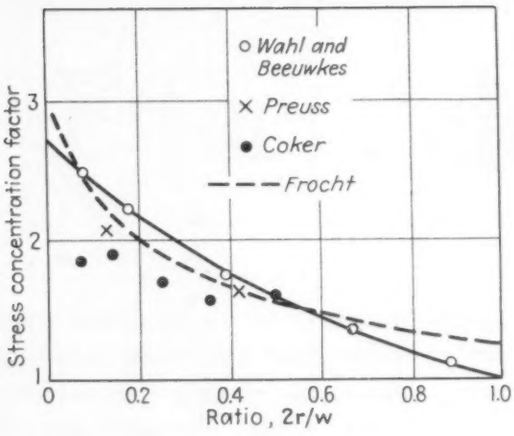
FIG. 19 — Distribution of stresses in a semicircularly notched bar under tension. (Coker and Filon).

LOWER LEFT

FIG. 17—Stress distribution in a V-notched flat bar under tension. (Coker and Filon.)

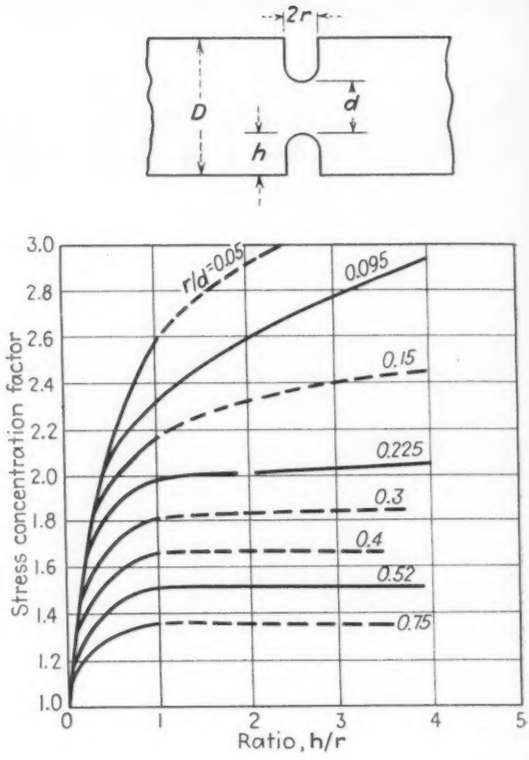






LEFT

FIG. 20 — Chart showing the effect of notch depth on stress concentration in the flat bar having semi-circular notches as shown in Fig. 19.



RIGHT

FIG. 21 — These curves indicate the effect of depth and radius of notch on stress concentration in a flat steel bar in tension. (After Frocht).

Thus, it appears possible to apply the information derived from the photoelastic investigations to a round bar in a semi-quantitative manner. According to Neuber[31] the stress peak in a round bar should be 30 per cent higher than that in a flat bar having a notch of the same profile.

Cohesive Strength

While considerable progress has been made in recent years regarding the fundamental conceptions of plastic flow in single crystals and polycrystalline aggregates, much less success has been achieved in finding the conditions of rupture[1]. It is known that the types of rupture are very different for stress states in which tension stresses are absent, or only present to a minor extent, and for stress states in which the major stress is tension. Also, the type of rupture varies for the different metals, apparently depending primarily upon their ductility.

The fundamental conceptions of failure under tension are that the metal particles are separated if a certain tension value, the "technical cohesive strength" of the metal, is reached, and that the surface of rupture is perpendicular to the applied tension.

No conclusive evidence has been supplied which confirms or denies this conception. However, it appears from extensive experiments by Schmid[38] on single crystals of the brittle type that cleavage occurs if the normal stress on the cleavage plane attains a critical value. The tension required to separate a crystal along its crystallographic cleavage plane is assumed to be smaller than the cohesive strength for any other possible plane of a crystal. The crystal, therefore, ruptures along the cleavage plane and not perpendicular to the direction of the maximum tension. However, a polycrystalline metal composed of crystals with many different orientations should develop a plane of rupture which is approximately perpendicular to the direction of applied tension, and which consists of numerous inclined crystal planes. Such fractures are frequently observed in coarse-grained, rather brittle metals. Also, the experiments on single crystals show that variations of the shear stress on the cleavage plane do not change the value of this cohesive strength.

Furthermore, experiments on single metal crystals show that the temperature of testing affects the cohesive strength much less than it affects the flow resistance (yield strength).

Regarding the effects of various factors on the cohesive strength of polycrystalline metals, only a few conclusive facts are available. The great majority of the commercial metals are ductile, and this condition excludes any simple method for determining the cohesive strength. However, steels and some other metals can be transformed into the brittle condition by lowering the temperature of testing sufficiently.

Plastic Flow

One of the principal factors which renders the knowledge of cohesive strength very uncertain is its change during plastic flow. The conception has been advanced by Ludwik[39] that the technical cohesive strength increases with the amount of plastic strain proceeding failure. This conception has been generally adopted and has been confirmed by Davidenkov and Sakharow[29] who showed that the (cohesive) strength of steel rods measured at the temperature of liquid air (−300 deg. F., −185 deg. C) progressively increases by previous stretching or drawing at room temperatures.

The cohesive strength of a coarse-grained metal is lower, according to general experience, than that of a fine-grained metal. This applies particularly to zinc, tungsten, and molybdenum, which are brittle at room temperature (in the recrystallized condition). Similarly, the (cohesive) strength of mild steel at the temperature of liquid air has been found by Davidenkov and Wittmann[23] to be higher in the properly normalized, fine-grained condition than in the overheated, coarse-grained condition. These tests also show that the cohesive strength depends little upon the temperature of testing as long as the metal is brittle, *i. e.*, if it is at a temperature below −240 deg. F. (−150 deg. C.).

The state of stress, that is the

relative magnitude of the stresses in three mutually perpendicular directions, is generally considered to be without influence on the cohesive strength of a brittle metal. The conclusion by McAdam[17, 18] that the addition of transverse stress increases the cohesive strength is not sufficiently supported by experimental evidence.

The presence of tensile stresses in both transverse directions, resulting in triaxial tension, increases the flow stress (yield strength), as previously mentioned. Thus with increasing triaxiality the yield strength approaches the cohesive strength, and the ductility of a metal decreases correspondingly. It is this fundamental relation which has been made responsible in most cases for the occurrence of brittle ruptures in normally ductile metals.

It is generally believed that the ductility, and correspondingly the cohesive strength, of a metal decreases with increasing section size, while the stress-strain characteristics and frequently also the ultimate strength vary only to an insignificant extent[40]. However, only a few tests by Docherty[41] on the static bending of notched bars can be considered as actual proof for such an embrittling effect. For geometrically similar specimens machined from the same piece, the bending angle at fracture decreases as the section size increases.

Local Necking

In regular tensile tests on ductile metals, the load at the moment of failure is frequently measured; and by dividing this by the cross-sectional area after failure, a "true breaking stress" is obtained. This value is also referred to as the "fracture stress"; but no attempts have been made to analyze the physical meaning of the quantity. This value does not actually measure the technical cohesive strength of the metal even for that condition of strain hardening which exists at fracture. This is because of local necking which occurs in metals having high ductility. The neck can be considered as a shallow notch, rendering the regular tensile tests a special case of a notched bar tensile test. Therefore, any conclusion drawn from measurements of the true breaking stress are open to considerable argument.

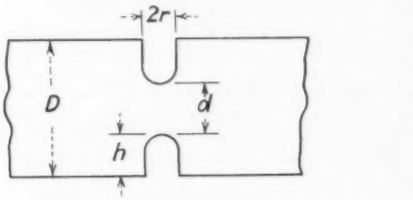
Regarding the effects of both the stress state and the direction of fiber of the metal on the true breaking stress, experiments have been carried out by Maier and Siebel[42, 43] on tubing which was subjected simultaneously to circumferential tension (caused by internal pressure) and to longitudinal tension. The results, Fig. 24, indicate that the stress state has practically no effect on the true breaking stress of steel tubing in either the longitudinal or the circumferential direction. The breaking stress in the circumferential direction was found to be only slightly lower than that in the longitudinal direction. Very ductile, low carbon steel was found to be an exception, the circumferential breaking stress being only approximately 70 per cent of the longitudinal.

These tests also confirm the decrease in ductility caused by the presence of tension in more than one direction. The ductility, as measured by the highest absolute value of the "effective (logarithmic) strain" in any one of the three directions, longitudinal, circumferential, and radial, is reduced either by the addition of a circumferential tension to a longitudinal tension or vice versa. The ductility is a minimum at a condition where the ratio between the two tensions is somewhere between 2 to 1 and 1 to 2.

As previously discussed in detail, the conceptions regarding cohesive strength, as developed from results on notched bar tensile tests, are not sufficiently supported by the experimental results, as yet.

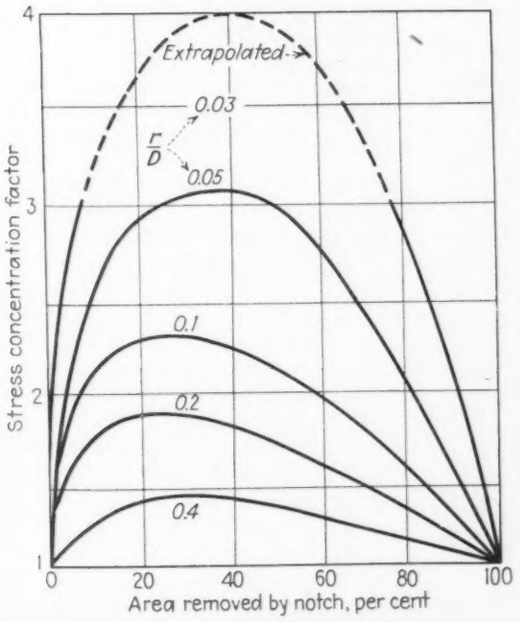
The effect of stress concentration on the cohesive strength of metals is unknown. Some experiments in this field have been carried out by Frocht", however, on a brittle material such as Bakelite, yielding the result that tensile test bars possessing a high stress concentration (bars with holes) break when the stress peak reaches the tensile strength of a uniformly strained bar. Thus, the cohesive strength of Bakelite, at least, is not affected by stress concentration.

(*Turn page for bibliography and Fig. 24*)



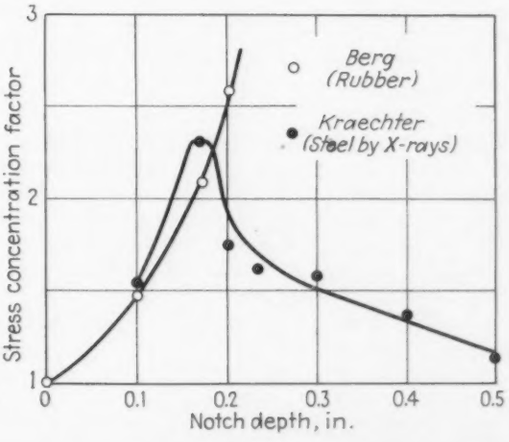
LEFT

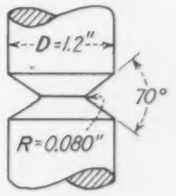
FIG. 22—This chart, derived from the work of Frocht, shows the effect of depth and radius of notch on stress concentration in a flat notched bar.



BELOW

FIG. 23 — Using samples like the round notched bar shown to the right, Berg and Kraechter secured these results in tests on rubber and steel, respectively.





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Bibliography

[30] E. A. Davis, "Combined Tension - Torsion Tests on 0.35 Per Cent Carbon Steel," *Transactions*, A.S.M.E., vol. 62 (1940), pp. 577-586.

[31] H. Neuber, "Exact Elastic Solutions Concerning the Notch Effect on Plates and Bodies of Rotational Symmetry," *Zeit. Angew, Mathematik*, vol. 13 (1933), pp. 439-442.

[32] E. Pruess, "Experiments Regarding the Stress Distribution in Notched Tensile Test Bars," *Zeit. V. Deut. Ing.*, vol. 57 (1913) pp. 664-667.

[33] E. G. Coker and L. N. G. Filon, *Photoelasticity*, London (1931), pp. 362-597.

[34] M. M. Frocht, "Factors of Stress Concentration Photoelastically Determined," *Journal of Applied Mechanics*, vol. 2 (1935), pp. A 67-68.

[35] A. M. Wahl and R. Beewkes, "Stress Concentration Produced by Holes and Notches," *Transactions*, A.S.M.E., v. 56 (1934), pp. 617-625.

[36] S. Berg, Forschungsarb. *Ingenieur Wesen*, No. 331 (1930).

[37] H. Kraechter, "X-Ray Determination of the Stress Concentration Factor of Notched Cylindrical Test Bars," *Zeit. Metallkunde*, vol. 31 (1939), pp. 114-115.

[38] E. Schmid and W. Boas, "Plasticity of Crystals," Berlin 1935, pp. 176 and 258.

[39] R. Ludwik, "The Meaning of Flow and Rupture Resistance in Material Testing," *Zeit. V.D. Ing.*, vol. 71 (1927), pp. 1532-1538.

[40] G. Sachs, "Some Fundamentals of the Flow and Rupture of Metals," *Transactions*, American Institute Mining and Metallurgical Engineers, Inst. Metals Div. (1941), pp. 12-29.

[41] J. E. Doeherty, "Slow Bending Tests on Large Notched Bars," *Engineering*, vol. 139 (1935), pp. 211-213.

[42] A. F. Maier, "Effect of Stress State on Ductility of Metallic Materials," Mitt. Materialpruefungs Anst., Stuttgart (1935).

[43] E. Siebel and A. Maier, "Effect of Multiaxial Stress States on the Ductility," *Zeit. V.D. Ing.*, vol. 77 (1933). pp. 1345-1349.

[44] M. Frocht, "The Behavior of a Brittle Material at Failure," *Journal of Applied Mechanics*, vol. 3 (1936), pp. A 99-103.

[45] E. Siebel, "Static and Dynamic Notch Toughness," Jahrbuch, Lilienthal Ges. (1936), pp. 383-396.

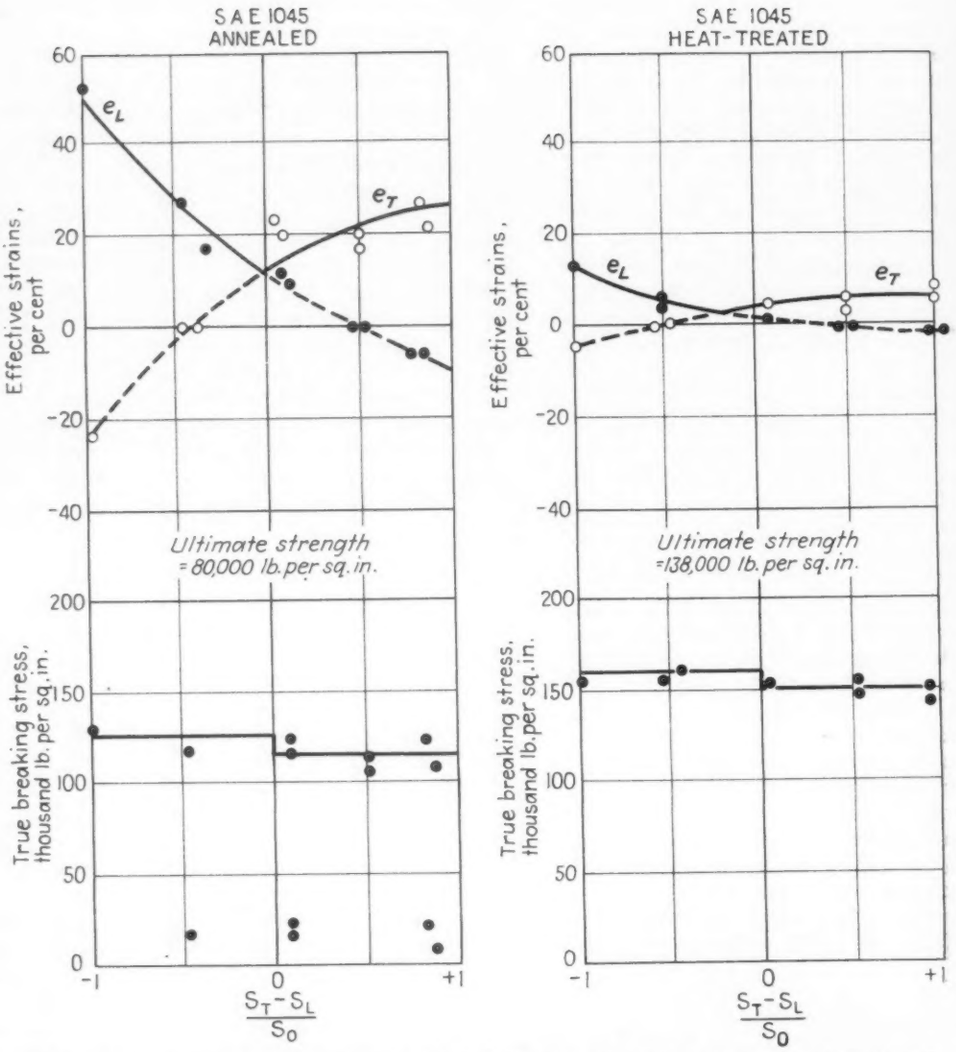
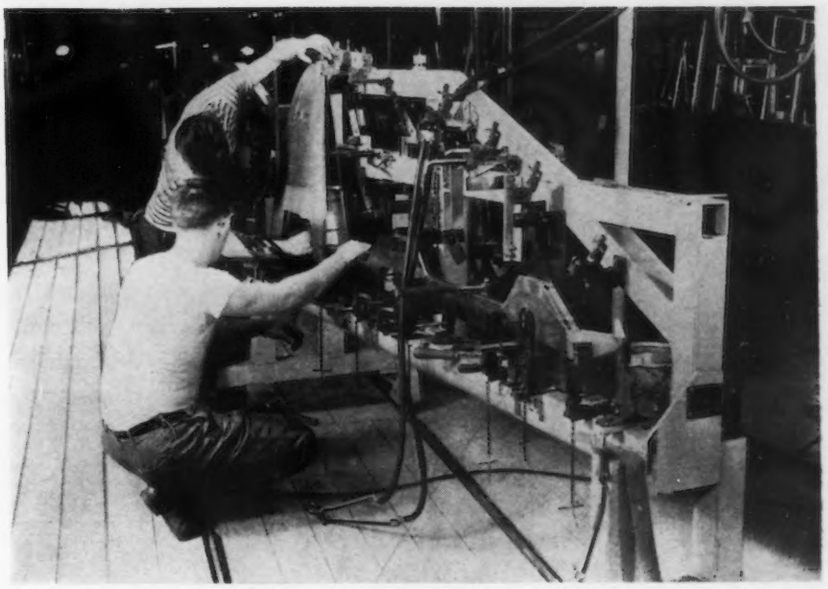


FIG. 24—Stresses and strains at failure of SAE 1045 steel tubing. The tubing was subjected simultaneously to a longitudinal tension S_L and a circumferential tension S_T. In the equations above, S_0 is the larger of the two stresses. Points on the line e_L show effective longitudinal strain at failure; those on e_T indicate effective circumferential strain at failure. These tests were carried on by Maier and Siebel.

o o o

Salvaging Waste Light



THE light colored floor and jig finishes give good visibility on all sides of parts under construction in this assembly jig.

o o o

BY means of the scientific use of color, it is practical to increase 100 per cent the illumination from most light systems. In many an industrial plant, a well-designed lighting system is robbed of its efficiency by dull, dingy ceilings, walls and floors. Without changing lighting equipment, it is possible to obtain greater illumination and increased usable light for each watt consumed by painting all surfaces—ceilings, walls, floors, machinery, benches and furniture —in light-reflecting finishes.

Results of extensive tests carried out by the Philadelphia Electric Co. and E. I. du Pont de Nemours Co. were given in a recent paper by Arthur A. Brainerd and Robert A. Massey before the Illuminating Engineering Society. Results of earlier tests were summarized in THE IRON AGE, Nov. 6, 1941, p. 65. These earlier tests showed that when the bodies of machines are painted in du Pont horizon gray, and the working areas in a contrasting hue with high light reflecting values, danger points are "spotlighted" clearly and the material being worked stands out in sharp contrast. This process is known as "Three-Dimensional Seeing."

In the more recent tests, a typical factory classroom with white ceiling and sidewalls, dark maroon floor and dark mahogany furniture was chosen. In successive steps, the ceiling was painted a lighter color, the sidewalls were refinished with a neutral green paint, the dark furniture was replaced with "blonde" furniture and finally the floor was recoated with white deck paint, stippled with spruce brown. As a result, the reflection factor was raised progressively with each color change, finally increasing it to 70 per cent for the entire room. The coefficient of light utilization was raised from 25 to 55 per cent, representing an increase of over 100 per cent.

Later investigations were made in a number of defense plants. The illustration shows the effect of using light gray floors on the assembly line in an aircraft factory. From a consideration of these investigations, it became apparent that only by the use of interior finishes having a very high reflection value (60 per cent or higher), can a maximum utilization of light be attained. This applies to floors, furniture, machinery, and benches, as well as ceiling and sidewalls. Adequate contrast for efficient and comfortable vision must be obtained through more of a contrast in hue than in brightness.

All surfaces within the room should have a high reflection-factor and therefore a definite hue contrast is desirable to compensate for low brightness contrast. And it is reasonable to suppose that as far as "spotlight" colors are concerned, the best results would be obtained when working in the region of the greatest eye sensitivity. This would be near the center of the visible spectrum.

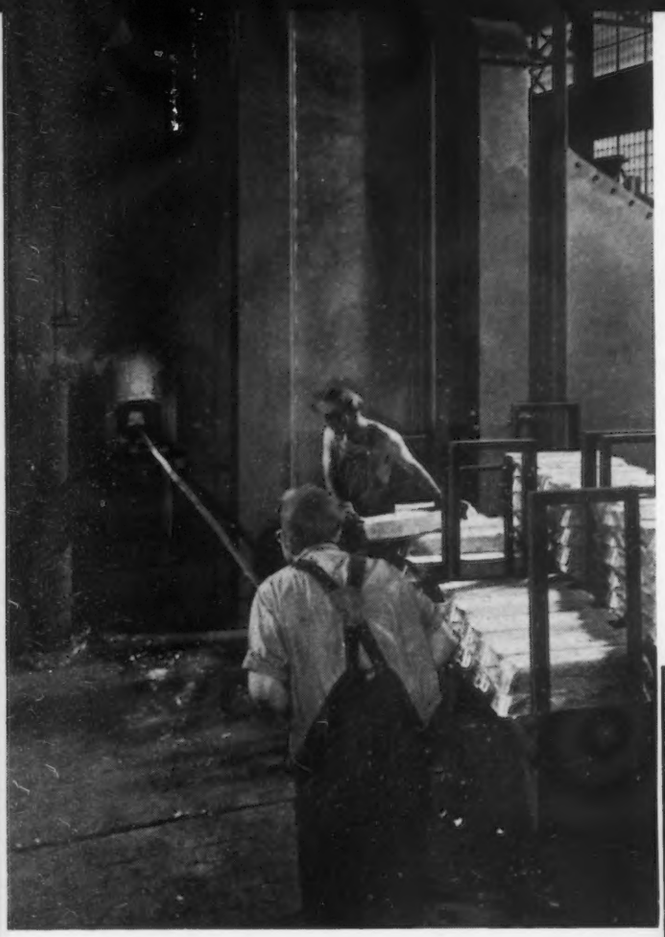
After a series of tests, spotlight buff was selected as the working color for machine tool operations on ferrous metals. Its reflection value is high, 68 per cent; it has a satisfactory contrast in hue with the material being manufactured, and is stimulating and comfortable to the workers. Spotlight green, a yellow-green, is somewhat similar. Horizon gray, a neutral color, is a good background color.

In order to aid manufacturers in the selection of colors for their specific operations, Du Pont paint maintenance engineers are equipped with a color selector by means of which suitable colors can be chosen for any industrial area, both for machinery and working surroundings. This color guide is fitted with a circular window, framed with the new spotlight green and surrounded by a field of horizon gray. On the other side, the combination is horizon gray and spotlight buff. By holding the window over the material being fabricated—first with the buff and then the green—it is possible to determine by inspection which of the spotlight colors produces the most desirable hue contrasts on the working areas of machinery. The new color selector also contains a slide which makes it possible to visualize several ceiling, wall and floor combinations. All colors have been selected for their light-reflective properties and ability to insure maximum utilization of light.

More Aluminum for

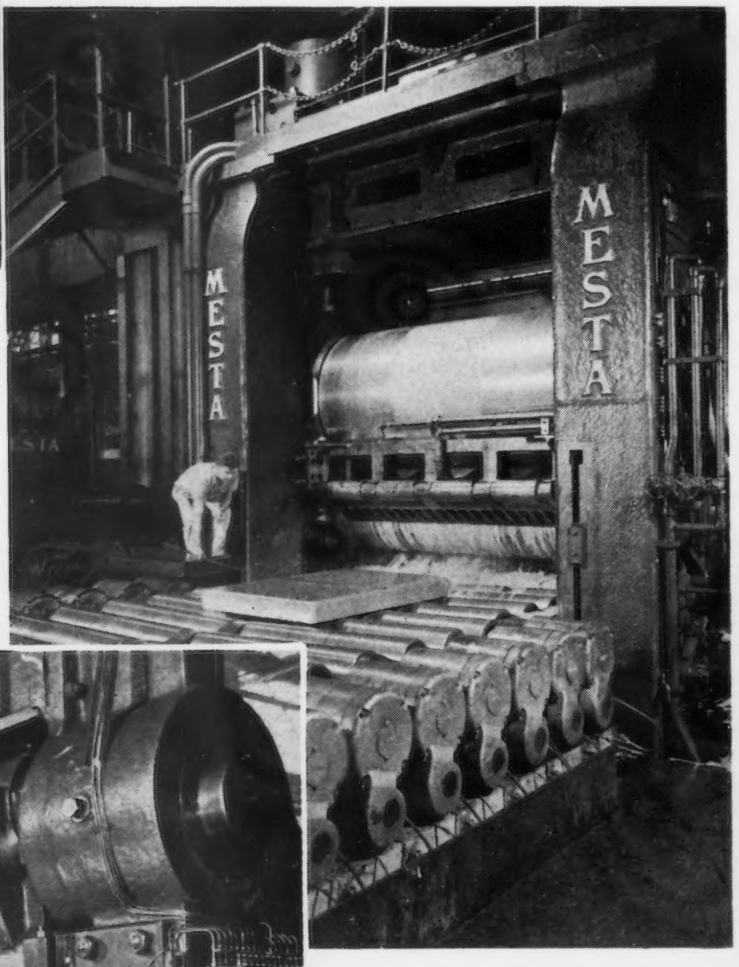
• • • First pictures of the new Aluminum Co. of America rolling mill at Alcoa, Tenn. This is the largest aluminum sheet rolling plant in the world, with 58 acres under one roof. That minister's son, Charles Martin Hall, fascinated as he was by a couple pellets of aluminum in his crucible, would probably be somewhat flabbergasted by the fleets of Crosley midget cars used for personnel transportation inside this enormous mill designed to meet the ever expanding demands of the aircraft industry. Three other

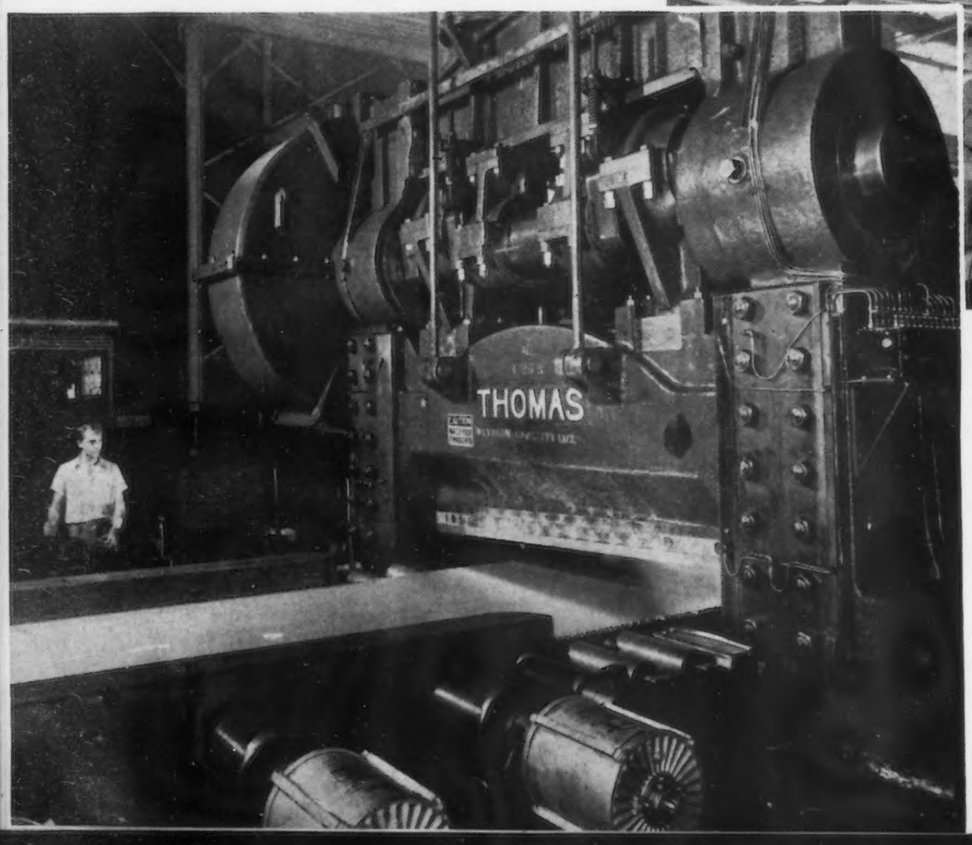
• • •



ABOVE

. . . Charging aluminum pig into a remelting furnace.





ABOVE

. . . Breaking down an aluminum ingot.

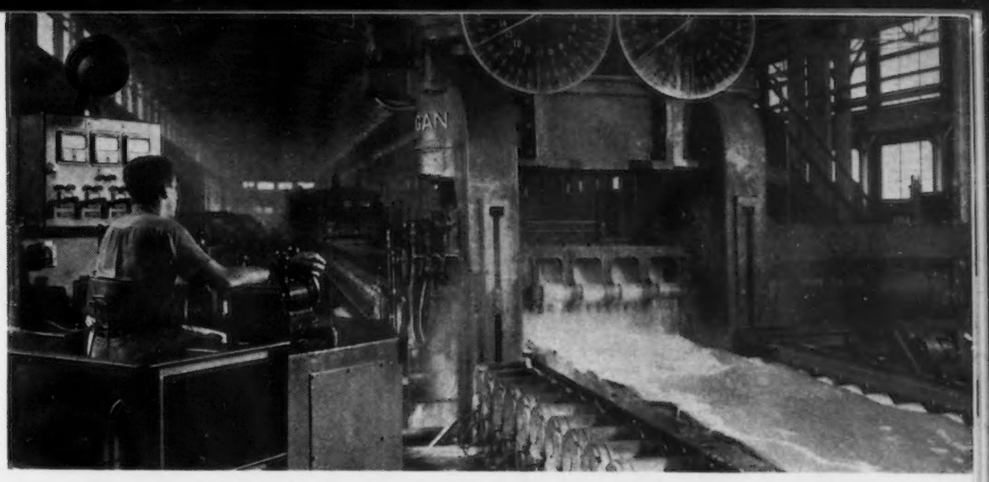
° ° °

LEFT

. . . Heavy shear for slabs.

Aircraft

plants similar to this in size and function are now building in other sections of the country, and by the time maximum aircraft output is scheduled there is full confidence that sheet aluminum will be available to fulfill the growing demands.



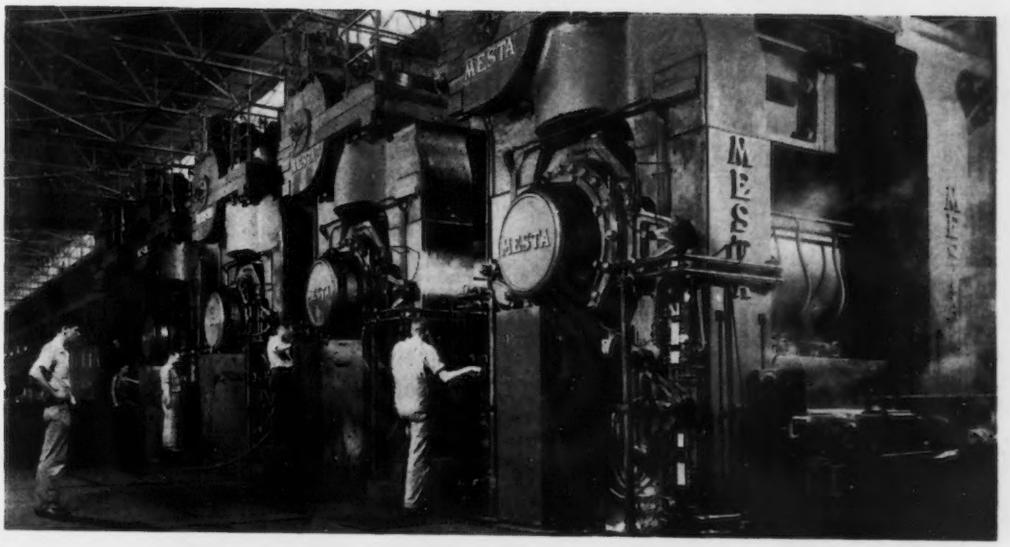
ABOVE

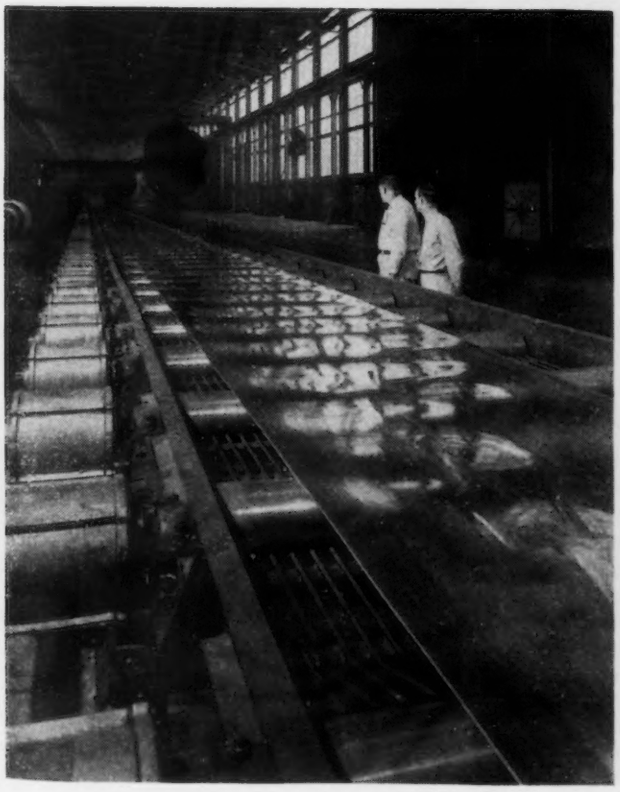
. . . Rolling slabs for the continuous mill.

° ° °

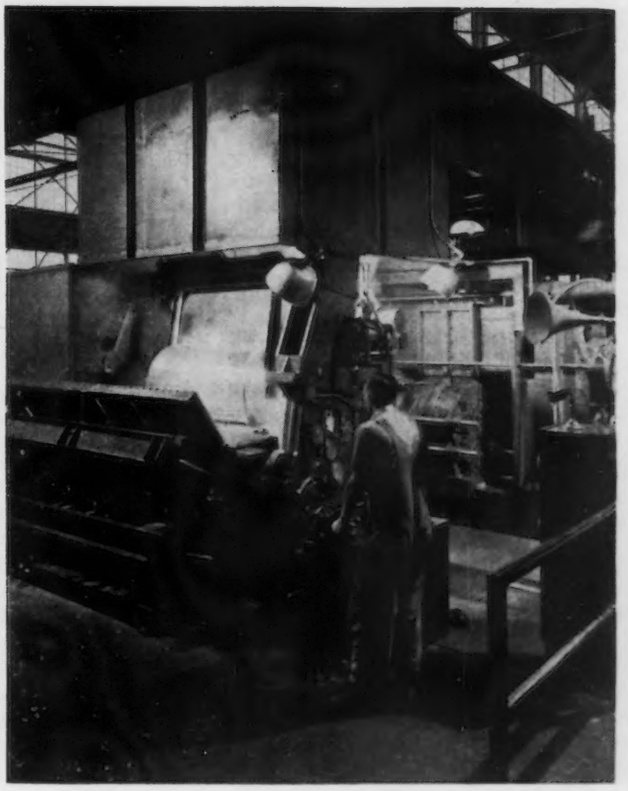
RIGHT

. . . View of open end of the continuous mill.





. . . Hot rolled strip leaving the continuous mill.



. . . Trimming and coiling hot rolled strip stock.

American Airmen

AMERICAN bombardment and pursuit formations are arriving in this country (England). Many are already settling down in their new quarters and carrying out practice flights. At least one pursuit formation is already flying Spitfires with the R.A.F., and several bombardment units have taken over airdromes from the R.A.F. and are flying Boeing Flying Fortresses (the B17ES) and Douglas Bostons.

According to the British publication *Aeroplane*, there is much the Americans can teach us and there has been plenty of evidence of their willingness to learn from the R.A.F. something of operational flying. The Royal Air Force has had nearly three years of air fighting. Our pilots have beaten the Germans whenever and wherever they have met them and have won two great air battles—the Air Battle over Britain and the Air Battle in the Near East. Now they are winning a third, the Air Battle of the Continent. The Americans in our midst do not underestimate the value of that body of experience.

There is probably no better comparison between the British and American nations than the maximum that the Americans can teach us something about democracy but have a lot to learn from us about freedom. Yet when it comes to comparisons between the fighting services of the two countries our American cousins seem to have succeeded in harmonizing democratic principles with freedom.

Visits to American service stations—in other parts of the world they call them forts—leave a queer impression on a Britisher, an impression which is definite without being altogether tangible. It is not, as so many of us imagine, irritating. In general there is a healthy freedom between all ranks in the American forces, both commissioned and non-commissioned. This creates an atmosphere which R.A.F. personnel probably understand but are too British to capture for themselves, which the Army frankly admires and which the Royal Navy cannot tolerate in theory but often approximates to in practice. It can best be summed up as the recognition of authority without superiority.

The Americans have got something which we lack. It is a most refreshing something. Maybe it needs the American mentality to achieve and would prove impracticable if built up on a British foundation. Perhaps lack of traditions and a feudal background have something to do with it. Only experiment can prove or disprove all that. And such experiment might prove costly if a failure and can certainly not be tried in war time.

They are efficient, these Americans; let us make no mistake about that and be willing to learn. A certain amount of this efficiency—business capability—has been introduced into the administration of their services with the result that there are brands in high places and natural American acumen elsewhere; two qualities which make a good combination, cut out a lot of red tape and yet develop what is almost a mania for detail—a very excellent thing when dealing with airplanes.

Obstacles provide no deterrent to Americans. There have been so many obstacles to overcome in the enormous task of developing their own vast country. Whereas the British tend to go round obstacles the Americans remove them; an older civilization like that of the Romans went over them.

In Trinidad the Americans had to construct a huge camp and airport in a certain area as part of the lend-lease agreement. The locality was not chosen because the terrain was appropriate and easily worked. The map was studied and the site picked because the locality itself was the most suitable. The end was fixed and the means made to meet it, there was no thought of the means being made to meet the end. The fact that the site chosen was wild forest, swampy, mosquito infested, ribboned with stagnant water channels, dotted with little hillocks and altogether uneven, meant nothing.

Armies of technicians arrived, labor was hired locally and imported, great and weird excavating machines, concrete mixers and trucks were shipped and the work started. A survey was made, the forests were removed, swamps drained, mosquitoes killed and breeding stopped by extensive use of chemicals, channels were filled in or piped, hillocks—some of them young mountains—excavated and the whole area leveled. To fly over the vast area, day after day, and watch the progress was an education. The work was accomplished, runways, roads, buildings, everything, well within schedule.

Still even the Americans are not infallible and in Trinidad an awkward old lady, often referred to as "Dame Nature," had the last word. The colossal concrete runways started to sink, their weight proved too much for the soft ground underneath. The experts were not a bit perturbed. They said it would last out the war and, in any case, settle down.

This is the outlook the Americans are bringing to bear on this war in Europe. The vaunted and proved might of the Nazi war machine is just another obstacle, recognized, assessed at its true worth and planned to be overcome.

The United States Army Air Force has already taken over several air fields from the R.A.F., others are being constructed for them. These stations are run entirely by Americans, the only R.A.F. light blue to be seen is worn by occasional liaison officers. A visit to a bombardment unit provided an opportunity to study and talk to personnel. They are purposeful, serious-minded men, these American air crews. There is no boastfulness about them but a quiet confidence. Their task is not an easy one and they fully appreciate the fact. On the whole they seemed large men but that is explained by the fact that small men are posted to pursuit squadrons.

All looked remarkably fit; many

and Aircraft . .

. . . Here's what they think of them abroad. The judgment is typically British in its calm analysis, and the balance sheet seems to show a lot of black ink.

of them are under canvas and appear to like it. Their uniform and flying clothing are excellent. One point, typical of our American Allies, is most noticeable. In Royal Air Force messes a certain standard of dress uniformity is expected if not definitely ordered. It can be irksome, especially in war time. The Americans seem to have got away from all this. Officers walk into their mess without tunics and with a variety of clothing.

This is no adverse criticism, rather the opposite in fact. Yet in a certain station in the British Isles where the Americans share a naval mess, due and careful decorum, in the matter of dress, is adhered to in deference to nautical customs. Even here the sedate naval captain is often somewhat startled with a casual salute and a "Good morning, cap'." On the other hand, it is at this station that the efficiency of the American ground staffs and maintenance is much in evidence.

On one occasion a Chesapeake damaged a wing while landing. In a few hours the wing was removed, a new one fitted and the machine taken up and tested. Here too the equipment brought over by the Americans is excellent, the tool kits of the mechanics especially so.

American bomber crews are eager to get on with their job. Weeks in Britain doing navigational training flights irk and a daylight raid on Berlin is their dearest wish. The British would be the last to wish their American friends to throw away aircraft and trained crews through excess of zeal, however praiseworthy that may be, or through lack of experience in operational flying.

Armament of Fortress

The Flying Fortress is not a really first class heavy bomber when compared with the Stirling, Halifax and Lancaster. For its size it does not carry a great weight or bombs. Bomb load seems smaller in relation to loaded weight. The B-17E is certainly heavily armed and will prove a formidable bomber for fighters to attack, although most of the guns are hand operated, and guns do not protect it against A.A. fire.

It has 13 machine guns. Two machine guns are in the rear turret, two in the waist half-way between the tail and trailing edge of the wing, one on either side, two in the turret under the fuselage, two in the turret on top, two in the nose and one firing through the top of the fuselage just behind the pilot's cockpit. A smaller machine gun is in the nose.

The crew consists of nine: Pilot, co-pilot, navigator, first wireless operator, second wireless operator, first engineer, second engineer and two gunners. The first three are officers and the wireless operators and engineers can fire the guns.

The pilot's cockpit is cramped and difficult of access, though the instrument panel is good, with the instruments nicely grouped. Everything is before the pilot's eyes and this eliminates the necessity of hand groping, which can be a bugbear to a pilot. The only physical communication between the pilot's cockpit and the main fuselage cabin is a narrow cat-walk through the bomb compartment. If the pilot or co-pilot were badly wounded it would be extremely difficult to carry him aft for first aid treatment.

This isolation must make the team spirit which is so essential for a good bomber crew most difficult to achieve. The Germans, no doubt for quite different reasons, are keen on the grouping together of a bomber crew and our own bombers are designed to make physical communication between members of the crew easy. This physical contact is much more important than most people realize. There is the practical side of it for a captain of an airplane always likes to know exactly what is going on behind him. The psychological aspect is fully appreciated by pilots and those who fly with them.

Ways of the Americans

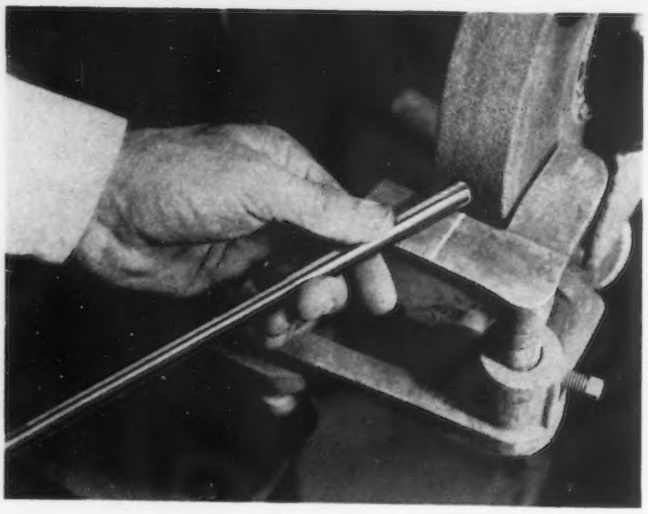
On bombing flights of 6 hr. or more it is a most welcome relief for the captain or second pilot to get out of his seat and stretch his legs and arms. If he can relax in the rear cabin occasionally it makes all the difference, but he must be able to leap back to the controls without delay. For this, easy and quick access from the pilot's cockpit to the cabin in the fuselage is essential.

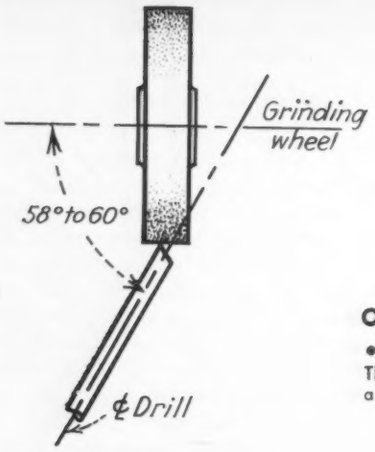
The American crews in Great Britain have some picturesque names for their machines. At the station we visited, we found Berlin Sleeper, Wimpey, Hangar Queen, Baby Doll, Little Skunkerface, among others. The tall C.O. of the squadron visited has the significant name of Capt. Flack. Writing of skunks reminds us that a Stirling squadron asked a United States squadron for a picture of this odorous little animal. They wanted to paint its picture on the fuselages of their Stirlings with the inscription "We are offensive."

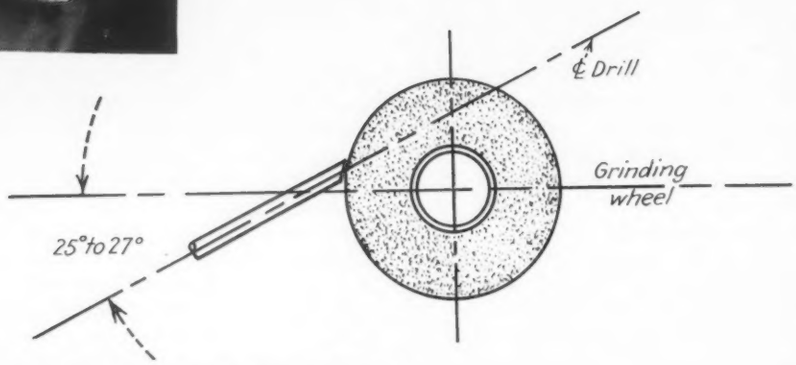
Another interesting little incident recounted by an American pilot demonstrates how small the world is becoming. Americans are sending their watches to America for repair by way of ferry pilots. One was received back in a week.

How soon these Americans will be doing operational flights or what will be the nature of their jobs is not for us to discuss. We can only hope that their machines will be tried out where the risk is not excessive or that these keen and well trained crews can be provided with more modern heavy bombers which will give them full scope to prove their undoubted worth.

Grinding







Operation No. 1—Forming cutting edge A.

• • • The drill is brought directly up to the grinding wheel while holding the drill at the angles shown. The width of *A* should be approximately 0.015 in. short of mid-way between the outside diameter and the center of the drill, or the width of *A* should be approximately one quarter the diameter of the drill.

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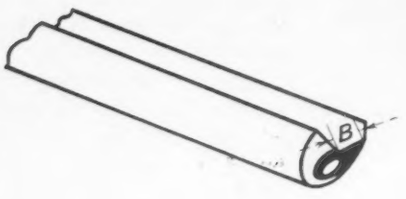
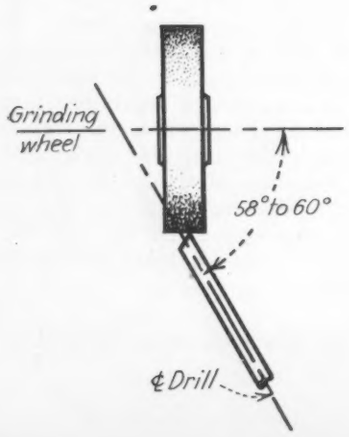
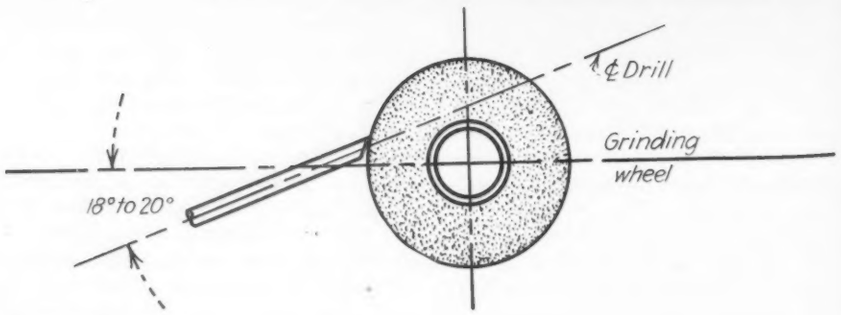
Operation No. 2—Forming cutting edge B.

• • • In grinding this surface, cutting edge *B* is developed automatically. As in operation 1, there is no motion needed other than a direct line approach of the drill tip to the grinder and a direct return. This operation together with operation 1 completes the cutting edges of the deep hole drill.







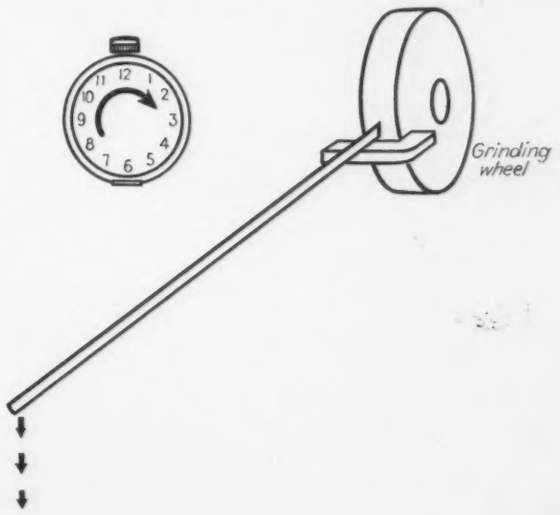
Rifle Drills Free-Hand . . .

SINCE rifle drilling is a war-time operation, it has been necessary for many machine operators to acquaint themselves with an entirely new metal cutting operation—deep hole drilling. This operation differs from conventional drilling, in that the rifle barrel is rotated and fed over a stationary drill. There are special deep hole drill grinders available which eliminate some of the difficulties encountered in grinding this drill, and also standardize the necessary movements required. However, where such machines are not available, men accustomed to grinding conventional drills on ordinary pedestal type grinders can learn through experimentation which type of grind for rifle drills is most effective for obtaining maximum production with the gun barrel material being drilled.

The following is a graphic description of the basic steps which can be successfully employed in free-hand grinding rifle drills on a conventional grinder. With a certain amount of experience and practice, good results can be obtained in following the procedure as outlined.

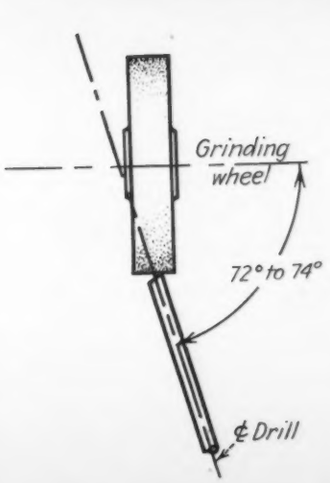
Operation No. 3—Developing back clearance of drill.

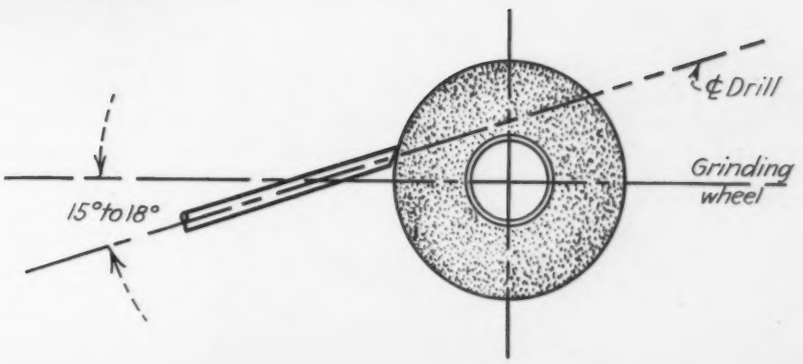
• • • As in grinding conventional twist drills, the back clearance angle must be greater than the helix formed by the feed per revolution used in drilling. The operation is started almost the same as shown for operation No. 1 except that it is necessary that the cutting edge *A* should not be disturbed. Direct contact between surface *A* and the grinding wheel can be avoided by simply lowering the drill shank slightly more than used in the first grinding operation. This third operation is performed by turning the drill in a clockwise direction at the angle illustrated while it is being lowered slightly at the shank end. The surface being generated is shown on the drill point.

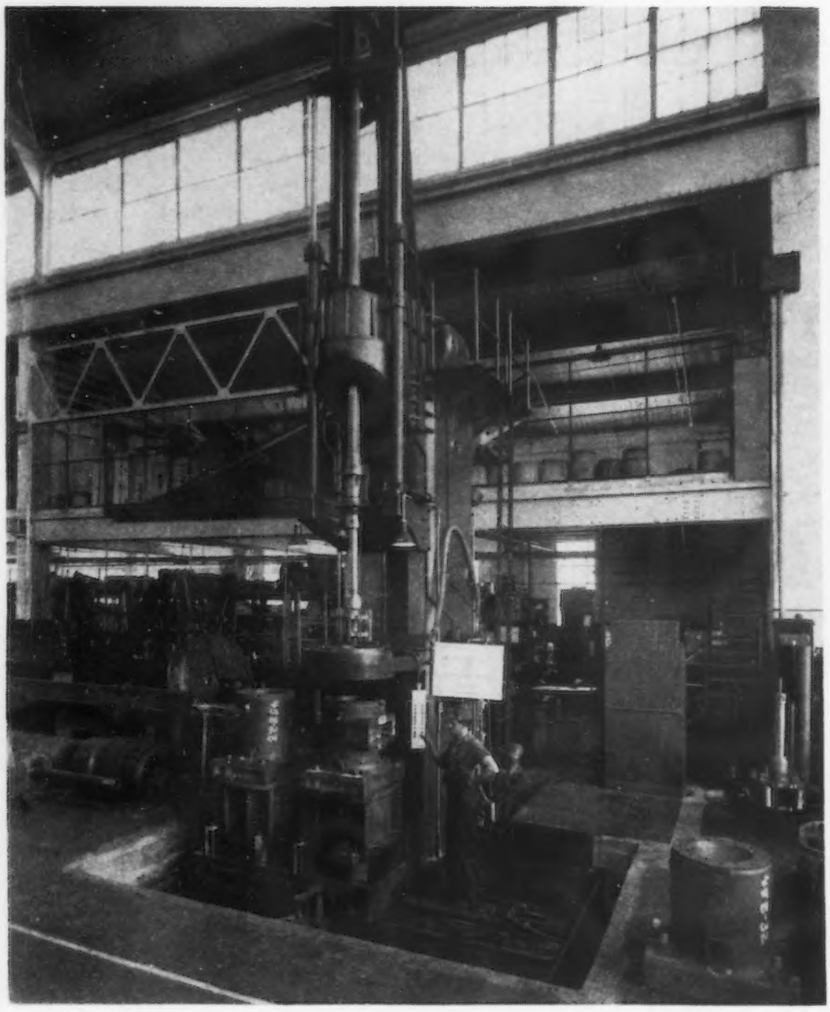


Operation No. 4—Grinding a flat to increase coolant flow from oil tube.

• • • The drill tip is simply presented in a direct line and at the angles shown to the grinder and pulling it directly away from the grinding wheel after the flat has been formed.



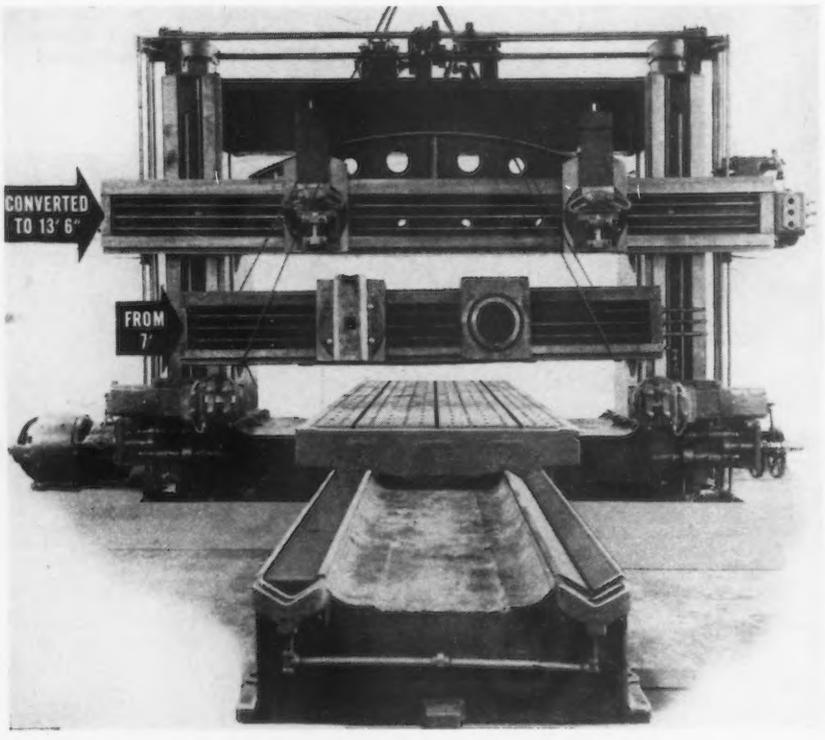




Precision on a Giant Scale

THIS HUGE HONING MACHINE, believed to be the largest ever constructed of a vertical type, is capable of honing a cylinder 26 in. in diameter and 6 ft. long. The machine was designed and built by the Cooper-Bessemer Corp., Mt. Vernon, Ohio, for its own use in the manufacture of diesel engines because the regular manufacturers of this type of equipment were not in a position to handle the order at this time. Honing is particularly applicable to two-cycle power cylinders with ports because of the intermittent cut on the boring operations. Grinding of cylinders above a certain size is also a problem because of the overhang of the grinding wheel on the spindle. Honing tools are not subject to this limitation and produce a true bore with a high degree of finish and within extremely close tolerances for work of this size. Watt's steam engine design lay on the shelf for 16 years awaiting the invention of the boring machine, which machined the cylinders only within an accuracy of a "worn half-farthing." What could not Watt have done with this 20-ft. high precision honer?

° ° °



CONVERTED PLANER: By providing a new rail and bridge, together with widening blocks between the housings and the bed, Simmons Machine Tool Corp., of Albany, N. Y., converted a Betts planer from 7 ft. capacity between housings to 13½ ft. as illustrated. The job was done for Vulcan Iron Works, which needed such a planer for machining the main engines of heavy cargo vessels. A new planer of this capacity could not have been delivered in less than a year. Time of delivery was shortened 75 per cent by rebuilding.

° ° °

HOW "Detroit" STANDARDIZED SPECIAL TAPS for SHELL for FASTER DELIVERY

Above: A group of 40 mm. shell, with some of the standardized DETROIT taps and the DETROIT thread gage used for checking the threads.★

A year ago practically every manufacturer of 40 mm. shell had his own specifications for the special taps required for identical operations: threading the ends of the shell body. With a score of companies involved, Detroit Tap engineers saw that if an agreement could be reached on the design of tap for these identical operations by different manufacturers that deliveries of taps could be speeded.

After thoroughly investigating the field requirements, Detroit Tap engineers recommended two standardized designs, one for each end. ★Today already well over half of these 40 mm. shell producers are using standardized special "DETROIT" taps—now turned out by "DETROIT" on a PRODUCTION basis with greatly expedited deliveries.

★Similar Standardized Taps for 20 mm. Shell also available

A new Detroit Tap Catalog will be off the press shortly. Shall we reserve a copy for you? Ask for Catalog 22 1A on your company letterhead.

DETROIT TAP & TOOL Company 8432 BUTLER DETROIT

Assembly Line . . .

• NE Steels join the Will-o-the-Wisp Class in many labs unable to get experimental amounts . . . Huge truck production program cut 60 per cent . . . Inventory clean-up planning chills automotive spines . . . Big post-war market seen.

DETROIT—Ever since the development and the publicizing of national emergency steels, many Detroit engineers have been rather perplexed over the whole situation. One reason is that they have been unable to get NE steels to conduct engineering tests and experimentations. The other reason is that comparatively few of their Army and Navy orders seem to be specifying NE steels.

The failure of many government orders to specify thin alloys, except for many aircraft contracts, was explained in probably as logical a manner as possible at a technical meeting last week. A WPB official hypothesized that the Army and the Navy are traditionally conservative

See page 83 for more facts.

in their outlooks and approaches, are therefore prone to edge into the specifying of NE materials, or anything else new, only with extreme caution.

But regardless of this situation, the automotive laboratories would like to have some steel of the new types to do their testing; and complaints over inability to get it are commonplace. The steel companies retort by saying that NE steel is no harder to get than other specification steel. They say that their orders for NE steel in experimental quantities generally run from 5 to 50 lb., and that they are unable to supply such minute amounts until they run a heat of the specification.

But even then, they point out that demand from the production shops for the thin alloys is so intense that the mills cannot segregate even a few pounds and ship them elsewhere. The retort which then follows from the automotive engineers is that it is impossible for them to test and experiment in order to produce properly in larger quantities until they have the smaller amounts to work with.

ONE suggestion has originated here that in view of the circumstances it might be a logical move to designate a certain warehouse, or warehouses, which would carry small quantities of each specification of the low alloys, earmarked for sampling by engineering laboratories. In the same breath, however, the proponents of this idea admit that the selection of outlets to stock such samples of requirements would be difficult, due to competitive factors. And the steel men cite the tenable viewpoint that if 1000 or 2000 lbs. of each NE specification were distributed to warehouses, the aggregate would mount up into tonnage, not of major proportions, but of proportions which might quite possibly cast a minor shadow over war output in production plants.

This is simply another phase of the broad picture of material problems which Detroit circles believe is hastening the end of the whole priorities system as it is now set up. Some unverified gossip is that requests for steel during the forthcoming quarter filed on PD-25 forms ran to the staggering total of around 80,000,000 tons. One steel man estimated that demand for alloy steel is at least triple the supply in sight and that demand for carbon steel is about double the supply. The only upshot of this general situation is expected to be a rigorous and abrupt scaling down in production planning for continuing and forthcoming war orders.

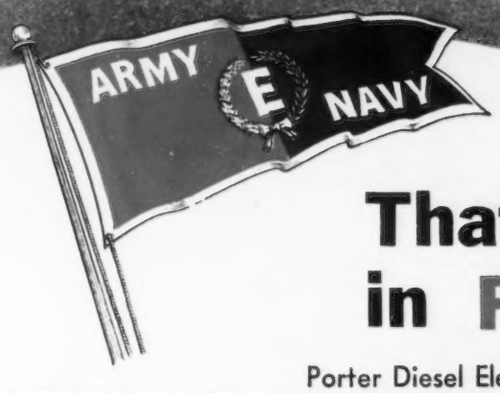
As was said here more than a month ago, there is expected soon a marked curtailment in the output of shells, which will become effective at end of this year.

An equally marked curtailment can be expected in the production of trucks. This anticipation is strengthened by the situation which has been taking shape for the past several weeks since dispatches from Washington told of the placing of the largest truck order in history, a commitment from the Army Transport Service for 880,000 trucks. Ever since then the order has been dwindling steadily in size and it now is understood to be down to a level around 420,000 units.

THE reasons for the announcement and the curtailments which began to develop immediately afterwards are not entirely clear. But at the time of placement of the order, industry sources expressed belief that its size did not appear to be in proportion with demands for materials developing out of other phases of armament manufacture. The broad inference was that the production of 880,000 trucks was unbalanced in relation

NEW LATHE USE: A lathe is now being used by the Studebaker Corp., South Bend, for reconditioning worn rubber rolls such as typewriter rolls, etc. By attaching a hand type buffer motor fitted with a grinding wheel to the tool post and mounting the roll in the lathe they are enabled to do an accurate dressing job, removing only about 0.003 in., to eliminate slight imperfections in the surface.

POWER with Economy



H. K. Porter Company, Inc., was one of the first to receive the Army - Navy Production Award.

That's what you get in PORTER DIESELS

Porter Diesel Electric Locomotives are proving by performance that they are tops on the toughest haulage jobs. Heavy welded steel trucks and main frames, and modern rugged construction throughout assure users of maximum operating and maintenance economy per ton moved.

Get the full story on the Modern Porter Diesel Electric Locomotives. Porter Diesels are built in a range of sizes from 25 tons to 80 tons.

(Illustrated above is a typical 65 ton double power plant unit.)

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PORTER "better built" locomotives

ONLY PORTER BUILDS A COMPLETE LINE OF LOCOMOTIVES FOR INDUSTRY

H. K. PORTER COMPANY, INC.

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to other requirements, although naturally the industry was quite willing to produce this volume whenever it might be ordered.

It appears now in the recasting of the orders to diminish them thus far by about 60 per cent, the large volume producers are being shaved down in considerably greater proportion than are the smaller manufacturers. In other words, manufacture of the limited quantity special types,. appears to be necessary in the originally conceived volume, but output of standardized types in huge quantity by the largest makers in the industry evidently can stand reductions.

There has been some squirming in the extreme ever since the Materials Requisitioning Branch of WPB put forth a program designed to wipe out the inventories of steel which have been in the hands of the automobile companies ever since normal passenger car output was eliminated early this year.

While these inventories have been quite considerably reduced since stock was first taken of them last February at the end of the auto industry's civilian production, they still bulk up in large size. Inasmuch as a good share of them consists of fabricated and semi-fabricated goods, there would be quite substantial dollar losses which would have to be taken on any sale at scrap price levels or at the program price levels which constitute the best offering of the Materials Requisitioning Branch. Many millions of dollars are involved in original and extended investments, and some auto industry sources estimate that the recovery would be no more than 50 per cent and might run below 25 per cent in isolated instances.

FOR the larger companies this would be an unpleasant pill for their balance sheets to assimilate. For the small companies it would be well nigh indigestible. In line with customary automotive practice, many of the supplier companies had built up inventories of semi-fabricated and fabricated goods considerably beyond current requirements at the time the sudden close out of production was ordered in January, to take effect in February. Ever since then, these stocks of uncompleted goods have been lying in warehouses. They would represent an actual value, developed by the cost of materials and labor involved, if they could achieve their intended destiny as automotive components. But that way seems closed to them until the end of the war, if not forever, and so these parts have little uses except as scrap, inasmuch as replacement parts requirements could absorb but a very small proportion of them at best.

The Materials Requisitioning Branch proposals, therefore, are obviously based on business logic when rockbottom price offers are made. However, there is no small degree of logic involved as well in the stand of the automobile manufacturers and their suppliers that requisitioning of such goods at prices far below the costs inherent in them constitute a fine form of confiscation. Right now there have been no firm conclusions reached on what attitude should be taken by industry in response to the demand. A "wait-and-see" policy has little value in the face of the government's admitted power to requisition, throw the material into the scrap pile and go on the defensive in legal procedure to follow. Notwithstanding this, the auto industry has not yet arrived at any formula to present its side or justify it, although it can be assumed that such a formula is, or soon will be, in the process of preparation.

There is no doubt in the mind of any industrialists but what the post-war consumer goods market will be a mammoth one provided tax rates do not continue or grow so high that they reduce incomes to subsistence levels.

Some light on the volume of the post-war market was shed by the Chamber of Commerce of the United States as a result of sampling of needs of thousands of families throughout the nation. This survey indicated that post-war consumer demands would immediately manifest itself in buying of 2,100,000 automobiles. There would also be demand for about 1,500,000 mechanical refrigerators, 1,200,000 washing machines, 1,200,000 radios and 600,000 sewing machines, among other items. It was said that 19 per cent of the people surveyed are saving a portion of their incomes for specific post-war purchasing. A total of 56 per cent of the families were said to be able to save money today despite higher living costs and taxes.

PLASTIC SAVES ALUMINUM: Two parts of this 1200 hp. Wright (Flying Fortress) Cyclone 9 engine, shown being assembled, are now made of plastic instead of aluminum with a great saving in weight as well as aluminum, according to a Wright Aeronautical Corp. announcement. The two parts, an air baffle which deflects air to cool back rows of cylinders and a push rod housing which protects rods between the cams and the valve assembly, since conversion to plastic, save about 25 per cent of their original weight and many valuable pounds of aluminum. The plastic parts are formed in one operation and do not even require painting due to a dye added in their making.

If You Are FORGING Stainless...

Reduce rejects by making sure that this metal with low thermal conductivity is preheated slowly and brought up to proper forging temperature. Always run furnaces at the proper forging temperature, not hotter. To keep forging operations going at full speed, it may be possible to heat more bars and billets at the same time.

If You Are GRINDING Stainless Steel...

When grinding, avoid deep scratches by always using the proper wheel. Don't increase wheel pressure to save time. This overheats the metal and can cause discoloring or distortion. And always use the proper lubricant. Your grinding wheel manufacturer can help you make sure that the proper wheel and lubricant are used for each job.

Check the Water On TUMBLING Jobs!

Another way to reduce Stainless rejects! On all tumbling jobs, make sure that the water used is "soft." Hard water forms an insoluble lime soap, impossible to remove. And balls so coated do not impart a satisfactory finish to the work. Hard water should be reduced to "soft" water before charging the barrel. This is done by adding 1 oz. of trisodium phosphate per gal. of hardness, per 100 gals. of water. Your local water company can tell you the grains of hardness per gallon in your water.

The time to start salvaging material is *before* it becomes scrap! Stainless Steel is worth more to you and to the war effort in usable strip and bar form, than it is as scrap.

Check *all along the line* for ways to conserve Stainless Steel by reducing scrap loss. Find new ways to reduce rejects that are costly in terms of wasted time and wasted material. Here are a few practical suggestions—to add to the methods you are already using to *get the most from every pound of Stainless Steel.*

SIX MORE WAYS to Conserve Stainless and Reduce Scrap Loss

1. *An embossed rib will add strength, and may permit the use of lighter gauge strip.*
2. *Check your physicals. Undersize material can cause wrinkling in the die. Oversize may explain tearing or galling.*
3. *Keep dies or draw rings highly polished and smooth.*
4. *Longer die life and smoother stampings result when draw rings are "finish stoned" with a fine stone — not a wheel.*
5. *Avoid sharp edges on rolls by using a slight radius.*
6. *Re-check layouts where parts are stamped from Stainless Strip... to reduce skeleton scrap loss.*

AND when you have reduced scrap loss to the absolute minimum, salvage the rest. It is VITAL to Victory!

★ Get in the Scrap for Victory ★

QUICK ANSWERS to Your Fabricating Problems

If you could use additional helpful information on fabricating Stainless Steel, a note on your company letterhead will bring you any of the following Carpenter Data Sheets:

Machining Blanking Punching Sheering Forming Drawing Spinning Cold-Heading Grinding Polishing Buffing Tumbling Ball Burnishing Welding Riveting Soldering

And remember that your nearby Carpenter representative can give you the benefit of his diversified experience with Stainless fabricating problems.

THE CARPENTER STEEL COMPANY
121 Bern Street Reading, Penna.

Carpenter STAINLESS STEELS

BRANCHES AT Chicago, Cleveland, Detroit, Hartford, St. Louis, Indianapolis, New York, Philadelphia

Washington . . .

• Steel industry, for the most part, complied with OPA ceilings, Deputy Administrator says . . . Record shows agency headed by Henderson appears to be winning battle against inflation.

WASHINGTON — This city, which coins dissension like a mint and is jampacked with bureaucrats stumbling over each other, is finding that Leon Henderson's OPA is an exceptionally well run agency. The country, too, is coming to realize that OPA wants to be an economic balance wheel and not a prototype of the Gestapo, as many feared OPA would become.

The last to wish bouquets thrown, is the chunky price chieftain who had palmed-off on him one of the toughest assignments ever handed out. In the first place, Leon Henderson is more used to congressional brickbats, than to compliments. In the second place, he has been so inured to complaints from labor and swarms of government officials who have been jealous of the job he is doing, that kind words wouldn't feaze him.

HOWEVER, for the record, OPA seems to be winning the battle of inflation. Comparative figures on the cost of living in the United States, Great Britain, Canada, Germany and Sweden, countries which have price control, show that the United States prices led the group with an increase in the cost of living between December, 1941 and August, 1942 of 6.2 per cent. But after the general freeze went into effect, the United States increase between May and August of this year was only 1.3 per cent, which was better than the 1.4 per cent increase for Canada and the 2.2 per cent increase for Germany.**

The United States wholesale commodity index advanced 6 per cent from December, 1941 to August, 1942, but fell off to 0.5 between May and August of this year, comparing favorably with the increases of Sweden and Germany. (See index table.)

OPA has kept the lid on prices it appears in spite of the fact that Congress and the White House have until recently resisted OPA attempts to bring farm prices and wages under some kind of control.

THE steel industry has shown that it appreciates the necessity for price control and according to John E. Hamm, Deputy Price Administrator, has cooperated with OPA to the utmost.

"There has been an entirely different attitude upon the part of the steel industry toward price control than there was during World War I. Executives of some of the larger companies—Benjamin Fairless, Eugene Grace and Tom Girdler, all have shown that they appreciate the economic importance of price control.

"Generally, price compliance has been very good, except for some of the smaller companies. Any noncompliance has been due to overenthusiasm, I am sure," Mr. Hamm said.

On the question of compliance, Mr. Hamm said that OPA was concerned with the larger issues such as the apprehension of tire thieves and the prosecution of gasoline racketeers.

"Contrary to popular belief," said Mr. Hamm, "OPA is not sending its price inspectors to the cross road stores of the nation to discover if a package of Post Toasties is being sold at prices above the ceiling."

As of July 31, according to the OPA Legal Division, only two cases of violation of Price Schedule No. 4, Iron and Steel Scrap had been referred to the Department of Justice for criminal prosecution. One violation of Price Schedule No. 43, used Steel Barrels, and a violation of Price Schedule No. 49, Iron and Steel Products, have also been referred for criminal prosecution.

During the period from May 1 to July 31, OPA received 37 complaints on violations of Price Schedule No. 1, Second Hand Machine Tools, 24 complaints pertaining to Price Schedule No. 2, Aluminum Scrap and Secondary Aluminum Ingots, 323 complaints on Price Schedule No. 4, Iron and Steel Scrap, but only six complaints of violation of Price Schedule No. 6, Iron and Steel Products.

PRICE Schedule No. 8, Pure Nickel Scrap, monel metal scrap, stainless steel scrap, etc., violations complained of amounted to six. The Pig Iron Schedule, which is No. 10, had 16 complaints of violation, and during the same period there were 47 complaints of violation of Price Schedule No. 49, Resale of Iron and Steel Products.

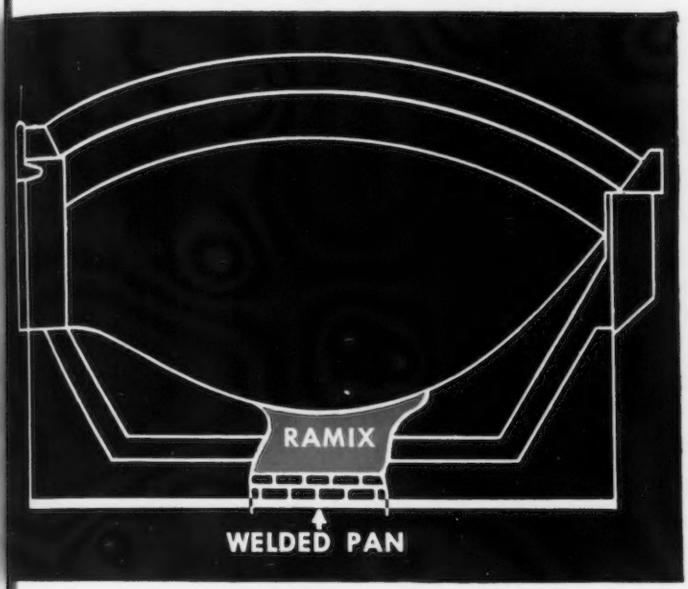
Of course, complaints with respect to a greater number of price schedules were received by OPA

Cost of Living and Wholesale Commodity Price Index

	Cost of Living Dec., 1941 to Aug., 1942 (percentage)	Cost of Living May, 1942 to Aug., 1942 (percentage)	Wholesale Commodity Dec., 1941 to Aug., 1942 (percentage)	Wholesale Commodity May, 1942 to Aug., 1942 (percentage)
United States	+6.2	+1.3	+6.0	+0.5
Great Britain	no change from Dec., 1941 to Aug., 1942	+0.5	+1.8	−1.3
Canada	+1.7	+1.4	+2.1	+0.4
**Germany	+5.8	+2.2	+2.4	+1.2
Sweden			+6.7	+2.1

** In the case of Germany the latest figures are for July 1942
Source of Figures—OPA Research Division.

"How quickly can you repair a bottom that a heat's gone through?"



How Ramix was used to make a permanent repair of a large hole cut in an open hearth bottom when a heat went through.

Ramix is a scientifically prepared magnesite refractory, shipped in bags, ready for quick installation. It needs only to be tempered with water before ramming.

• The first time that question was posed to a Basic Refractories Field Engineer was two years ago, when Ramix was just earning its reputation as a dependable cold-ramming refractory for permanent repair of open hearth bottoms.

There was no hesitation in the Basic Engineer's answer: "In a very few hours after you get the pan welded." And the job was actually completed—pan welded, Ramix tamped in, bottom dressed and the furnace ready to charge—in less than 24 hours after the break through.

Here's the simple procedure, followed in this and several other break-through cases since then: As soon as the furnace was cool enough, new plate was welded solidly to the pan from below. Next, Ramix tempered with water was shoveled into the hole (approximately 6 x 3 feet) and tamped in to conform to the old bottom contour.

Then, after the furnace was brought back up to temperature, banks and bottom were washed down and the entire hearth dressed lightly with magnesite. The furnace was then ready to resume operation, with a *permanent* bottom repair that has stood up under hundreds of heats since then.

Basic Engineers are "standing by" for all steel plants nowadays. They are *your* refractories service men and are always glad to assist. Don't hesitate to call upon them for help.

BASIC REFRACTORIES FOR THE STEEL INDUSTRY

MAGNEFER—Dead-burned dolomite for hearth and slag line maintenance.

SYNDOLAG—Dead-burned, rice size dolomite for maintenance.

BASIFRIT—Quick-setting magnesia refractory for new construction, resurfacing and maintenance.

OHIO MAGNESITE—Domestic dead-burned high-magnesia grain refractory, equal to Austrian.

695 PLASTIC—Strong plastic basic refractory for hot and cold repairs.

RAMIX—An air-setting, time-saving basic refractory for rammed hearths and cold repairs in open hearth and electric furnaces.

GUNMIX—A basic refractory for maintenance of furnace walls, sized for use with a cement gun.

HEARTH PATCH—For deep hole patching and other quick repairs in the basic open hearth.

RAW DOLOMITE—Washed open hearth dolomite in rice size and standard ⅝-inch.

BASIC REFRACTORIES INCORPORATED

FORMERLY BASIC DOLOMITE, INC.

CLEVELAND, OHIO

than these mentioned. Many cases are pending, or in the process of investigation. Some of the complaints have been dismissed or settled without investigation.

To date, OPA has filed suits for injunctions to prevent approximately 120 steel company defendants from further violating Price Schedules, 4, 6, and 49. The majority of these petitions for injunction have been filed against scrap dealers and smaller steel companies for violation of Price Schedule No. 4.

On Sept. 30, OPA moved for injunction against 26 companies in the Federal court at Cleveland for alleged violations of Price Schedules 6 and 49.

More than 15,500 tons of steel are alleged to have been sold at prices in excess of the ceiling. The excess is estimated to be $225,000. A temporary restraining order has been issued, and the hearing date for the case has been set for early this month.

The OPA Enforcement Division has been active since July, both with respect to cases referred to the Department of Justice, and with respect to civil suits commenced. OPA spokesmen say that the period of education on price controls has been long enough for OPA to start more intensive efforts to enforce price regulations.

NOTWITHSTANDING OPA's good record which it blames on voluntary public compliance, it feels that the price program has been unnecessarily hampered by the fact that Congress cut its appropriation by $90,000,000. To do the job well, OPA feels that Congress should provide funds for about 14,000, additional employees. It wants to increase its field offices by 50 or 100, its price inspectors by 6000, and its enforcement attorneys by 400.

Mr. Hamm said that OPA now has only 3000 price inspectors—less than one a county, and that OPA inspectors cover most of the large cities, but there are "great big gaps." He pointed out that in Region No. 7 which consists of the states of Montana, Utah, Idaho, Wyoming and New Mexico, the business communities are often located many hundreds of miles from the nearest OPA office.

Putting emphasis on the expectation of voluntary compliance with price schedules as a patriotic duty, Mr. Hamm said that legal process alone could not be depended upon in this connection. When asked if 9000 price inspectors were enough to enforce the Price Control Act, he said, he thought that number adequate. He added that OPA had asked other regulatory agencies who employ inspectors how many OPA would need. These agencies replied that their inspectors were hired with the idea that each man would make one contact a year per 100 subject to the regulation.

"On that basis, with 130,000,000 people in this country, OPA would have to hire 130,000 inspectors," he smiled, "but then we don't want to try to compete with war industries and the military for manpower."

THE BULL OF THE WOODS — BY J. R. WILLIAMS

I KNOW NOW WHAT THAT WHITE STUFF IS IN THE CRACKS OF YOUR SHOES -- IT'S THE WHITE LEAD THAT THE APPRENTICE KIDS PAINT YOUR SHOES WITH WHEN YOU'RE ASLEEP, AND I ALSO HEARD THAT SOME MACHINISTS ON BIG MACHINES OFTEN GET FIVE AND SIX HOURS SLEEP IN A NIGHT! AND YOU'RE ALWAYS TOO TIRED TO HELP ME!
WELL, I DON'T RUN A VERY BIG MACHINE, AND SOME O' THEM TOUGH KIDS WILL PAINT YOUR SHOES WHILE YOU'RE TALKIN' TO TH' BOSS! WHO TOLD YOU ALL THAT TRA'SH?
COPR. 1942 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.
J.R.WILLIAMS 10-15

AFL-CIO Will Attend Navy Labor Conference

Washington

• • • **The Navy Labor Relations** Conference, to be held in Washington on Oct. 22-23, has opened its doors to organized labor by issuing an invitation to the CIO, AFL and all other national and international labor organizations to select and send delegates to the conference.

Two hundred and fifty delegates will also be selected from Navy yards, ordnance plants and other shore establishments of the Navy to attend the meeting.

The purposes of the conference, as described by Ralph A. Bard, assistant Secretary of the Navy, are to bring representative workers of Naval establishments into closer touch with high officials of the Navy.

WLB Rejects Raise In General Cable Case

Washington

• • • **The WLB showed** a new facet Oct. 1, when it turned down, for the first time, a wage agreement negotiated satisfactorily by the normal employer-employee method of collective bargaining in the case of the General Cable Co., Rome, N. Y., plant.

The board turned down an agreement of 7c. an hour increase for the General Cable employees, even though this was satisfactory with the management, because this amount exceeded the 15 per cent yardstick by which all wage increases are being measured now. The board stated that the proposed wage increase "conflicts with its stabilization policy."

Speed Up GUN BARREL INSPECTION

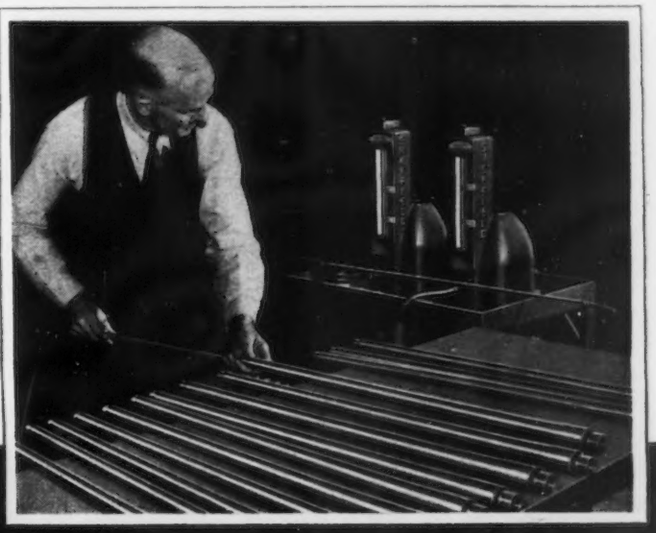
In just one pass through a gun barrel the Sheffield Precisionaire tells the inspector whether or not the bore is within prescribed tolerance or, if not, whether it is oversize, undersize, out-of-round, or bell mouth —also exactly at what point any dimensional discrepancy occurs.

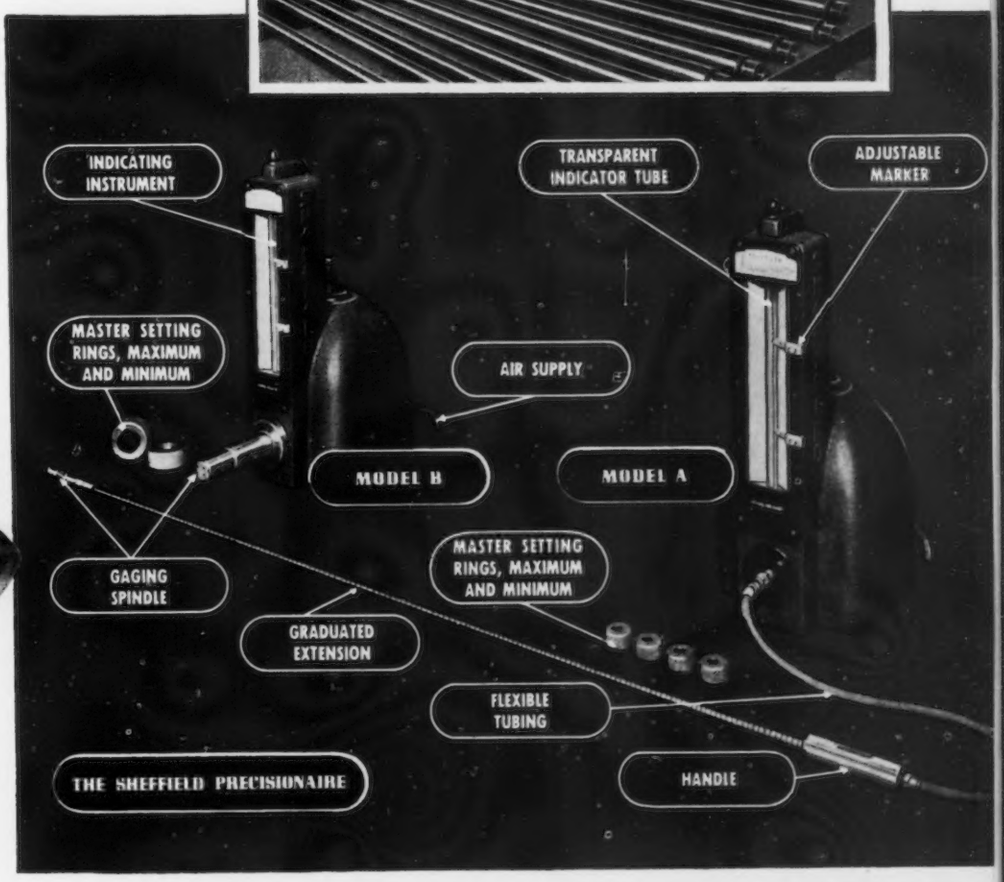
It takes no longer to inspect a gun barrel than it does to push a cleaning rod through it and no more skill, in spite of the fact that the Precisionaire is accurate to .0001″. Any new operator having no previous experience can be taught to handle this gage in less than fifteen minutes.

Contrast this speed and this accuracy with inspection by previous methods which were not only slow but which required the highest order of gaging skill in order to maintain accuracy.

The same instrument provided with two slightly different gaging spindles is used to check the bore before rifling and then, by changing the spindle, give it a final inspection after it is rifled.

The Precisionaire, while it is being used extensively for gun barrel inspection, has a number of other very important uses all described in bulletin 42-23. Write for your copy now.





THE SHEFFIELD CORPORATION

DAYTON, OHIO, U. S. A.

SHEFFIELD GAGES — MASTER GAGEMAKERS

WEST COAST . . .

• Wood and plastic airframe industry grows steadily, with 119 firms supplying parts to assembly plants . . . Railroads praised for preventing port congestion . . . New cargo plane company to be known as Kaiser-Hughes.

LOS ANGELES — Overshadowed by the tremendous long-term expansion of metal aircraft and parts manufacturers in southern California is the speedy, silent growth during recent months of manufacturers of the 1942 streamlined version of flying packing crates.

In number, the manufacturers of wood and plastic airframes and components are increasing surprisingly. In a recent compilation of Los Angeles County firms supplying accessories, parts, materials and machinery to the big assembly plants, 302 firms were listed as supplying metal parts and sub-assemblies. Wood and plastic construction occupied 119 firms. Of this 119, of course, a substantial proportion contribute also to planes whose principal material is metal. An increasing number, though, are feeding prime contractors for wood, plastic, or combined wood-plastic-metal aircraft.

With wood-plastic-steel training planes in mass production and with the wood-plastic combination being more than eyed as a material for cargo and troop transports, the growth in this segment of the industry is just reaching puberty.

TIMM AIRCRAFT CORP., which gained its early growth as a fabricator of sub-assemblies for the big aircraft companies in this region, and more recently has pioneered in the plastic-bonded plywood field, last week announced further expansion of operation so that facilities could be provided for production of Army Air Force units. With this announcement came confirmation, as usual, that many of the components have been sub-contracted to the smaller firms capable of handling plastic-bonded plywood fabrication. Los Angeles was a sprouting furniture manufacturing center, when the war began to cut into home furnishing production. Thus experienced potential sub-contractors for aircraft are considerably more advanced than were metal working subsidiaries when metal aircraft manufacturing made its initial big expansion here.

The Navy has confirmed award of a contract to Timm for its N2T-1, known publicly as the Aeromold Trainer. That the Navy has been sold on the use of the all-plastic bonded plywood planes is, in itself, proof of the extent to which restricted supplies of metal have influenced broader thinking along aircraft material lines. Lest anyone gets the idea, however, that plastic and plywood is about to crowd metal aircraft off the map, let it be understood that even Timm continues on a large scale its manufacture of metal sub-assemblies.

Completing the roster of aircraft parts manufacturers, mentioned above incidently, are 114 firms making engines, engine parts, materials and accessories; 11 firms making propellers, propeller parts and production equipment; 41 firms building electrical equipment; 17 firms turning out aircraft instruments; 10 firms whose facilities are devoted to aircraft radio and equipment; 137 processing plants; 27 servicing institutions; 55 plants building miscellaneous equipment; 258 machinery, tools and shop equipment producers; and 92 firms who act as trade suppliers and distributers.

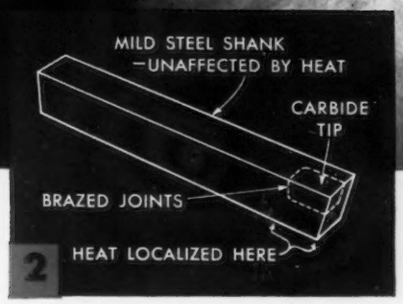
SUBSTANTIAL as a group, but individually little more than dots on the production map in most instances, the so-called aircraft parts plants in some ways take quite a pushing around from the prime contractors who are their customers. Sales departments should be glad to know that there is at least one field in which the customer still calls the plays—this is it. Specifically, the clash between the airframe industry and the aircraft parts industry is caused by competition within a close area for materials, machinery, and most of all for labor. In these three fields of contention, the airframe industry—which is the sophisticated way of referring to Douglas, Consolidated, Lockheed-Vega, North American, Vultee, Northrop, and Ryan—has been most troublesome in taking labor from the smaller parts makers. Friction has been keen, but generally, when uniting forces to deal with organized labor, the airframe industry has by sufference allowed the combined parts industry at least one silent delegate. Such was the case at the ill-fated wage stabilization conference in July which broke up when it become evident that the attending government agencies were not all agreeable to passing on to Uncle Sam whatever wage raises might have been agreed upon. The Aircraft Parts Manufacturers Association, which represents the parts people, had shouted for a right to participate at that conference, but inasmuch as they were not direct parties to the negotiations, they were granted only the right to sit and listen at the closed meeting. As it turned out, that concession probably was ample, for much too much was said by those allowed to speak, and one more voice would only have further added to the confusion.

AS this appears in print, the second canto of the aircraft wage stabilization epic should be in full harmony, or discord, according to the mood and tone of the voices involved. There is no guarantee that it will actually be underway, for signals have been called several times already without the ball being snapped. At this time, the aircraft parts association is without even silent representation, and last week, Jack Frost, executive secretary, issued a pronouncement greatly resembling in tone a similar strongly worded proclamation of 250 years ago: "It seems inconceivable that a conference should be held by the major aircraft companies and unions representing those plants which admittedly will have a profound effect upon production in sub-contractors' or parts processors' plants, without the lat-

BRAZED by TOCCO in 20 SECONDS!

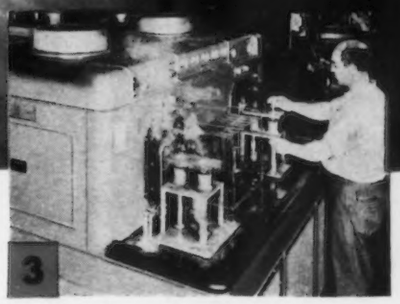
1

Adapters are being silver-soldered in 4.2" mortar shells at the rate of 20 seconds per shell by TOCCO Induction Heating. The base also is silver soldered by TOCCO. Rapid and localized heating maintains the original physical properties of the shell.



2

Another TOCCO-brazing application. Carbide tips are brazed to mild steel tool shanks by TOCCO Induction Heating as shown. Rapid heat, confined to brazed zone, produces tight, uniform brazes.



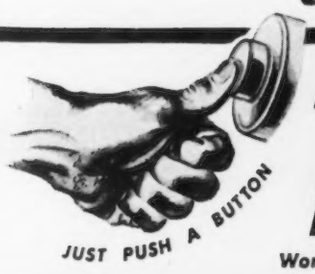
3

TOCCO Jr. machines are processing a wide variety of war materials such as burster tubes, shown above. TOCCO machines can be used for hardening, brazing, annealing or heating for forging or forming... war or peace-time products... by changing only the work fixture.

Full details in "The TOCCO Process" booklet. Free on request.

THE OHIO CRANKSHAFT COMPANY

Cleveland, Ohio



TOCCO

World's Fastest, Most Accurate Heat-Treating Process

HARDENING
ANNEALING
BRAZING
HEATING for forming and forging

ter having any voice in the results." Frost's inference that the conference will have results must in itself have startled the conferees who participated in past negotiations. Frost further dropped as a stinger the assertion that the sub-contracting and aircraft parts processing industry in this locality has more employees than any one major aircraft company.

A MORE effective bomb on the aircraft labor front last week was a ruling by the National Labor Relations Board ordering North American Aviation, Inc., to desist from that familiar term "unfair labor practices." The ruling rose out of a plan which the company had suggested that individual employees could settle their grievances directly with their foremen or supervisors without observing the grievance ritual set up in the CIO company contract. This, it seems, offended the UAW which, by the margin of a very few votes, had been chosen by the workers as their bargaining representative. The filet of the NLRB ruling, however, was a reference to a portion of the company-union contract, which, incidently, has since expired, to this effect:

"The no-strike-no-lockout provision in the contract is, of course, designed to keep disputes between the parties from interfering with the respondent's (company's) operations and thereby burdening or obstructing commerce. *But it constitutes no guarantee that such interruptions will not occur.*"

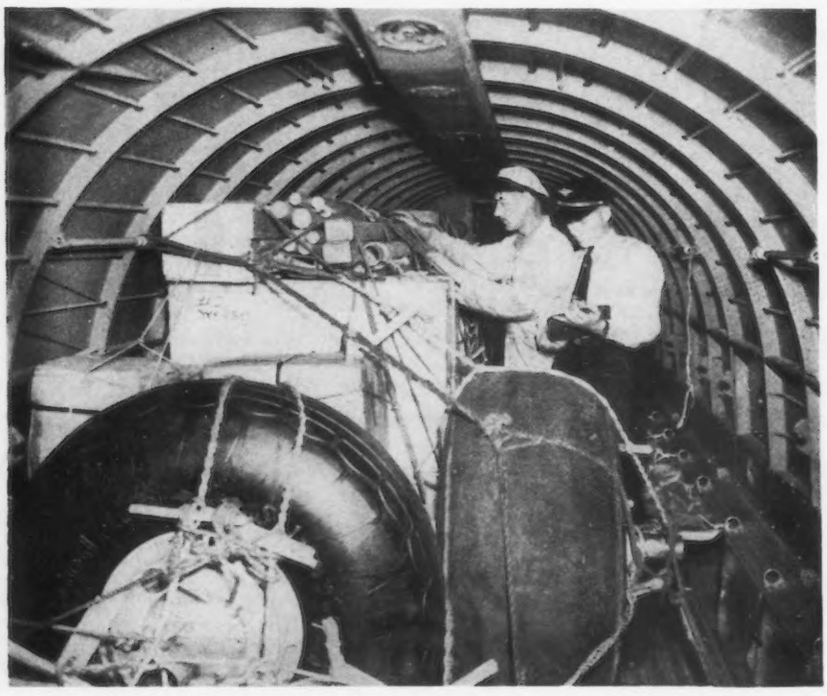
BY and large, Pacific Coast steel customers seem to have settled down and ceased their croaking over slow steel deliveries and lack of steel, and have decided to do the best they can with what they have. This improved situation is partially due to a wider dispersion of highly rated orders among the smaller shops, and final resignation to mortality among those unable to handle war contracts. Despite continued national publicity about faulty steel distribution, strangely enough reports indicate that less expediting is necessary than a few months ago. Fabricators of structural steel are reported to be complaining in the Pacific Northwest over dwindling backlogs in their specialties, due to lack of additional orders for heavy steel frame buildings and cranes, so that their books will be clean by Christmas.

Reports on the manner in which trans-continental freight is being handled by the railroads continue extremely laudatory. Congestion in the railroad yards and at the docks has not been serious, and in most instances freight is hustled off upon arrival.

In the construction field, chief item of uncensorable news originating on the Coast concerned erection of the corporate frame work under which one Henry J. Kaiser and one Howard R. Hughes will build three trial giant cargo planes—and they hope more—for Uncle Sam. The new firm, which will cause still more crowding in the industrial boudoir in which Kaiser corporate marriages are consummated is to be known as Kaiser-Hughes, according to articles of incorporation filed with the Secretary of State at Sacramento. The corporation was formed, according to its directors, to operate without profit. Members of the board of directors are Kaiser, Hughes, Howard P. Hall, Neil S. McCarthy, E. E. Trefethen, Jr., and G. G. Sherwood, which indicates that the Hughes and Kaiser clans will be equally represented in constructing the big planes.

POLAR FREIGHT: Aerial freight for Alaska is being checked into a Northwestern Airlines cargo plane by Don McIntosh while E. E. Calvin lashes it into place. Note the size of the freight that is carried regularly. The metal loops along the ledge at the right are for making shipments fast.

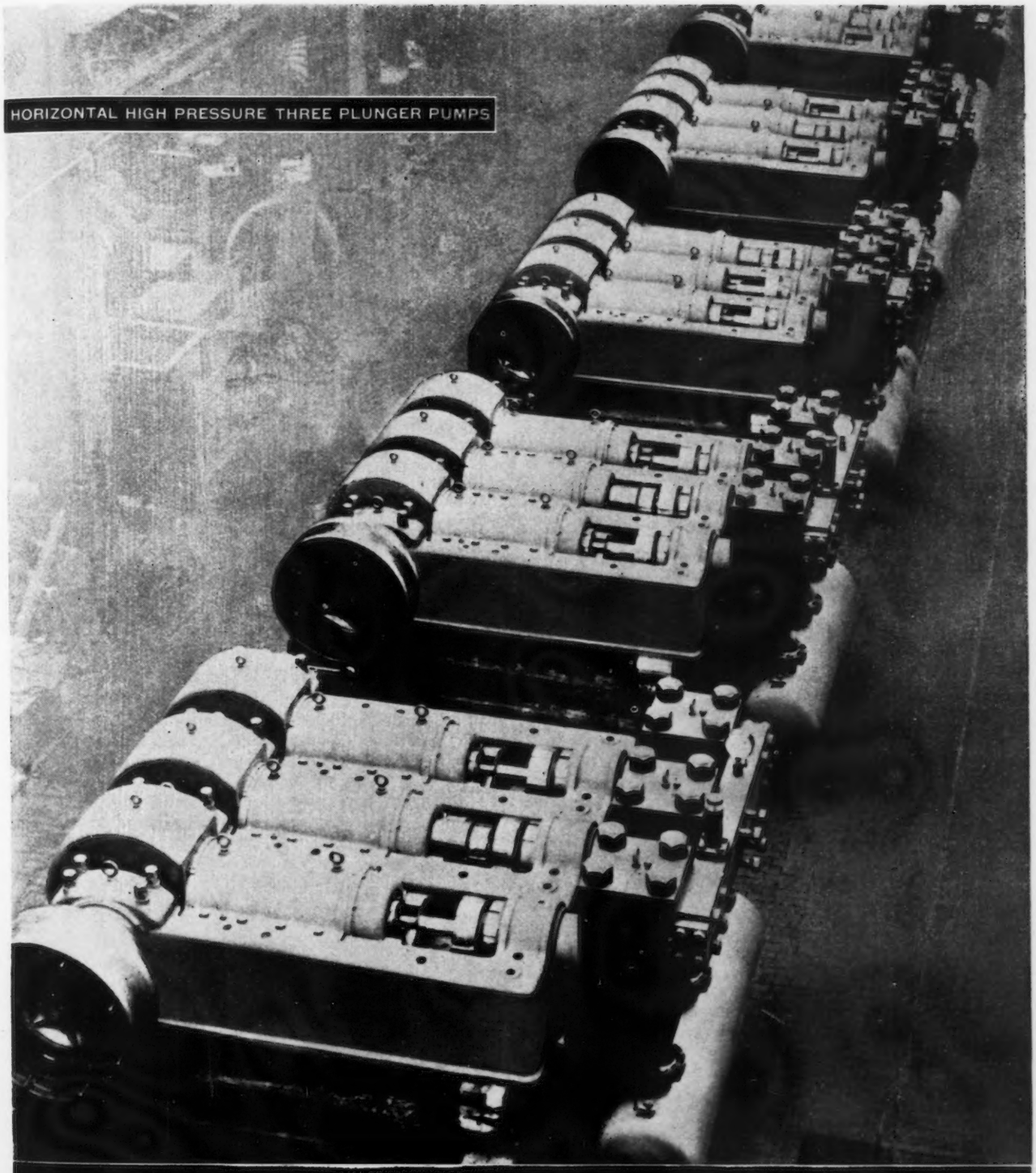
Wide-World Photo



Fitzhugh Deputy Chief of WPB Containers Branch

Washington

• • • **Several changes** in the organization of the WPB Containers Branch have been made. W. W. Fitzhugh was named deputy chief of the branch. Formerly assistant chief, Mr. Fitzhugh has been with WPB for over a year and was at one time chief of the Folding and and Set-up Box Section of the Containers Branch. He is president of William W. Fitzhugh, Inc., Brooklyn. Franklin R. Kelly, formerly acting chief of the Folding and Set-up Box Section, was appointed chief. He has been with the WPB since January and has been active in the folding and set-up box industry since 1935. R. S. Solinsky was appointed chief of the Metal Can and Tube Section. He has been with WPB since March, first as executive consultant and later as administrator of Orders M-81 and M-136. He will continue to administer these orders. Mr. Solinsky is President of Cans, Inc., Chicago. Roswell C. Mower, formerly chief of the Metal Can and Tube Section, is now special assistant to Mr. Sheldon, Chief of the Branch. He is vice-president of the Manz Corp., Chicago.



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570 LEXINGTON AVENUE · NEW YORK · N. Y.

Fatigue Cracks BY A. H. DIX

Blameless Graycoats

• • • We wish we could lay on the bent back of your letter carrier the sin of getting the big Oct. 1 issue to you late. But the facts are otherwise, and the fault was ours. We missed our mailing schedules by whole days, for which we apologize to you and to every other member of the one, big more or less happy family, and especially to those who contributed to the avalanche of short and long distance telephone, telegraphic, and epistolary complaints.

Of course, we regret the necessity for the kicks, but inasmuch as they were justified, we were glad to get them. For they strengthen our suspicion that reader interest in your favorite family journal is hotter than, to steal a simile, a three-dollar pistol.

Naval Blunder

• • • Chet Ober, of the advertising sales staff, who was a two-striper in the war to end wars, decoded the naval signal flags in the pretty photograph on page 105 of the Oct. 1 issue. They read, Chet says, T-H-I-S W-E-E-K, indicating that the publisher of the Sunday supplement of the *New York Herald-Tribune* and other newspapers has friends in the right places.

But, our expert adds, it is a nautical faux pas to have two hoists of code flags from the same yardarm. If more than one hoist is used the first should be suspended from the starboard arm and the second from the port arm. Sorry.

Triple Zero

I can go you one better on your "twice as cold as zero" problem. An old book, "Strange But True," concerning the exploits of a sea captain who sailed across the Atlantic with his wife in a dory tells about hunting on an island where the hunter must wander around in cold "several times below zero."

—A.W.M.

Aptronym

• • • A Cleveland butcher, we are told by Frank (Warner & Swasey) Cavenagh, is named Gohr.

Bathetic Note

• • • So great is our affection for every member of the flock that when one leaves we send him a message of sorrow, enclosing his metal address stencil, with the plea that he use it soon as his ticket of admission back to the fold.

Although the letter is warm, we thought it just missed the palsy-walsy note. But now we are not sure, for a departing subscriber writes:

> My heart, too, is breaking. I feel so bad I can hardly write this letter. If you were only here so I could cry on your shoulders. But these are terrible times and I have to leave for the Army to fight for your good magazine.
>
> So I'm signing off for the duration. Please get hold of yourself until I return to machine shop life. I will have to stop as the tears are blinding me. I am wearing the stencil over my heart. If it deflects a Jap bullet I will send you the bullet.
>
> *—C. C. Edwards, Wellsboro, Pa.*

That settles it. Note to Miss Brosche: Tell the people that do our automatic typing to cut the water drops on this form letter from six down to two (small) and make the signature a little less shaky.

Possible Backpat

• • • This week we have another letter from a reader who is leaving to go into the army. S. J. MacMullan, Jr., of Butler, Pa., writes:

> This will break your heart and lower your subscription renewal rate by 0.1%, but we might as well face it. I cannot renew my subscription to my FTNASRM, better known as The Iron Age.
>
> When I am resettled and the war is over, you can be sure I will be back in the family.

We are 4-F at interpreting initials and don't even know what Leon Wesley Moffett, your Washington observer, means by ANMB in the item reading, "New rules for PD-25A routing, Requirements Committee and ANMB functions and duties . . . have been established." So FTNASRM is completely over our head. If it is flattering and printable we hope Mr. MacMullan will decode it for us.

Plug—Small

> The Iron Age was mentioned on the radio the other night. Charlie McCarthy said, "Did you ever hear of the Steel Age? Did you ever hear of the Iron Age? Well, this is the Salvage." The laughter was moderate.
>
> *—Dear*

Scrap Chill

> The Fuel Rationing Board will get after you sure, for sending chills down the backs of your eighteen readers with your suggestion that scrap wardens "survey the premises" in the drive for scrap.
>
> To the lay eye, the toolmaker's flat in my cellar workshop would look like a stove lid, my accurate-to-.0001 test bar would be indistinguishable from an odd, useless length of cold rolled, and my stock of h.s. drill rod would be something to toss carelessly into the back of the wagon.
>
> *—A. W. Miller*

We said nothing about commandeering scrap. The scrap warden's power would be limited to suggestions. Obviously he would have sense enough not to drool as he looked at your matched set of Kroydons—$7.50 a club, times nine is $67.50. But he might talk you into parting with what you regard as a spare lawn mower —the one with the sprung cutting bar, which cut all right on the ends but left the grass standing in the middle, and which you haven't used since the year before last when you got the fancy one with the rubber tires.

65-Year Backward Look

• • • While rummaging through his attic, a Midwesterner ran across a copy of your favorite family journal dated Nov. 15, 1877, and was good enough to send it to us. This item on page one might interest you:

> Foreign importers at Kobe complain that trade is declining—that the Japanese do not buy as extensively as formerly, but are every year imitating foreign goods in order to keep their money at home and render their country self-sustaining . . . so that the foreigners established in Kobe are finding themselves quite out in the cold.

Tract Distributor

• • • WPB has ruled that manufacturers of tract-laying tractors . . .

—From a business advisory service bulletin

Probably for use in the bible belt.

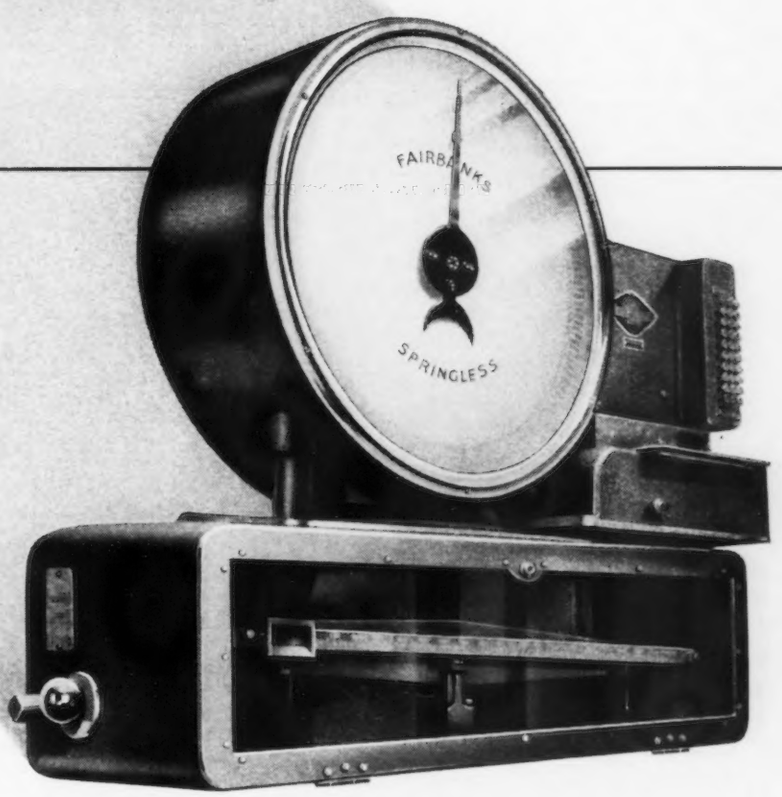
Puzzles

Last week's daughter was one year old then.

The best time we have seen made on the following is five minutes. Fifteen minutes is average and worst is one hour. The blanks are to be filled in with four-letter words, all of which are spelled with the same four letters:

A ——— old woman
On ——— bent
Put on her ———
And away she went.
"———, my son,"
She was heard to say,
"What shall we do
To ——— today."

THESE SCALES HELP UPSET THE AXIS TIMETABLE!



THE speed and accuracy of modern Fairbanks Scales, and their many ingenious applications, are helping rush war matériel production.

Use your priority to get Fairbanks weighing equipment that will not only save precious minutes now but also serve you best in years to come.

Fairbanks scale engineers are ready to help you plan for today with an eye for tomorrow. Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago.

FAIRBANKS-MORSE

FAIRBANKS SCALES

SCALES
DIESELS
MOTORS
PUMPS

Dear Editor:

BLAST FURNACE RECORD

Sir:

In one of your February issues we read with interest that a new record for blast furnace production was established by No. 3 Carrie blast furnace of the Carnegie-Illinois Steel Corp., when a total of 41,782 net tons of pig iron were produced during the month of January 1942.

We cannot agree that this is a world's record. As far back as May, 1941, the "A" blast furnace of the Tata Iron & Steel Co. Ltd., Jamshedpur, India, had an output of 41,915 net tons. This operation was carried on during a month when there were only two days in which the thermometer did not cross the 100° mark. On eight days it was over 110° and on four days over 115°.

J. J. SHANDY,
General Manager
Tata Iron & Steel Co. Ltd.,
Jamshedpur, India

PRIORITY GUIDE

Sir:

Will you kindly forward to my attention a copy of the Priority Guide as published by THE IRON AGE.

L. R. ADERER,
Purchasing Agent
Fletcher Aviation Corp.,
Pasadena, Cal.

• You received the latest Priority Guide as part of the Oct. 8 issue. Extra copies of the 56-page Guide, with special cover, cost 50c each in quantities of one to ten, less in larger quantities.—Ed.

TUYERES

Sir:

I would like to get names of firms that build tuyere sets for blast furnaces.

ARTHUR V. LEY
Ley Brothers,
La Plata, Md.

• This class of work is usually jobbed out by the blast furnace builders, of which two leaders are Arthur C. McKee Co., 24th and Chestnut Sts., Cleveland, and H. A. Brassert & Co., 60 E. 42nd St., New York.—Ed.

FOOLPROOF GAGING

Sir:

Today we received the six copies of the article, "Foolproof Gaging System." We find that the demand for this article is greater than we had first anticipated and would appreciate your sending us four more copies of this same article.

We attach 60 cents in stamps for this added quantity.

F. T. BOYD,
Tool Supervisor
Walworth Co.,
Greensburg, Pa.

CEILING PRICE BOOKLET

Sir:

In your March 19 "Fatigue Cracks" you mention a price pamphlet giving the OPA ceiling prices on commodities.

Enclosed are 25c in postage stamps. Please send a copy.

F. A. WATTS,
Purchasing Agent
Humble Oil & Refining Co.,
Houston, Texas

CUTTING TOOL GUIDE

Sir:

Please send us four copies of "The Guide for the Proper Choice of Cutting Tools," by Leo St. Clair, which appears in the October 1 issue.

H. M. GREIST, JR.,
Purchasing Agent
Greist Manufacturing Co.,
New Haven, Conn.

• We charge 10c each, to cover postage, but you might get them free if you write direct to Leo J. St. Clair, General Tool & Die Corp., 66 Franklin St., East Orange, New Jersey.—Ed.

NICKEL FOR TIN

Sir:

With reference to Mr. Foley's letter on the Lancaster, Pa., tin mine in your Sept. 10 issue, I inquired of Prof. Myers of Mineral Economics. He never heard of such a mine either.

A syllabus of Pennsylvania Geology and Mineral Resources written by G. N. Ashley, State Geologist, Harrisburg, Pa., 1931, page 133, states: "For many years Pennsylvania supplied all Ni mined in North America (1863-1888). This came from the mine near Gap, Lancaster County. It was first opened in 1732 and worked for Cu. The ore showed from 1.10-2.26% Cu, 1.53-4.23% Ni and Co." In this bulletin no mention is made of tin in Pennsylvania.

International Nickel owned the above mine. Note the time seems to agree with that indicated by Mr. Foley. Maybe this nickel mine is what he had in mind.

F. R. MORRAL,
Asst. Professor Metallurgy
Pennsylvania State College
State College, Pa.

KIRKSITE

Sir:

In your issue of May 28, we noticed on page 37 an article referring to Kirksite "A" die material in which we are interested.

As we do not know who are the suppliers of this material we shall be greatly obliged if you will kindly obtain for us full particulars and prices, also informing us at the same time if there are any existing difficulties in exporting this kind of material to Buenos Aires.

Ferrum Industria Argentina De Metales S.A.,
Avellaneda, Buenos Aires

• Write to Morris P. Kirk & Son, Inc., Los Angeles, Cal.—Ed.

BINDER FOR IRON AGE

Sir:

Do you have any sort of binder which you can send us so that we may keep all issues of THE IRON AGE in good condition and proper order in our library?

If so please advise how much they are and approximately how many issues each binder will hold.

ELIZABETH C. ROUNTREE
Kaiser Co., Inc.,
Washington, D. C.

• Most stationery stores can supply a binder suitable for THE IRON AGE and other standard size magazines. An imitation leather binder, with stiff covers and binding rods to accommodate six ordinary size issues of THE IRON AGE, costs about $2.50 if bought direct from the manufacturer. One supplier is R. S. Ruggles & Co., 6 Varick St., New York City. Gold stamping the cover costs from 25c to $1 extra.—Ed.

BOUQUET

Sir:

On several occasions you have very kindly sent me duplicate copies of THE IRON AGE to replace those lost in transit. I have not received the issues for April 3, 1941, and January 8, 1942, and should be glad to receive a copy of each of these issues if they are now available.

I should like to take this opportunity of thanking you for this service which you are rendering to the students and research workers in Sheffield, and to assure you that IRON AGE is in constant demand in the Science and Technology library here.

J. P. LAMB,
City Librarian
Sheffield City Libraries,
England

AIR RAID DATA

Sir:

Back in your issue of August 14, 1941, there appeared an interesting article "Air Attack vs. Steel Structures." Would it be possible for me to obtain a copy of it?

S. A. ANTHONY, JR.,
Sector Command
Air Warden Service,
New York, N. Y.

• It's a pleasure.—Ed.

TOOL STEEL DIRECTORY

Sir:

Your publication "Directory of Tool Steels" has come to my attention. You will find enclosed 25c for which please send one copy.

H. L. SMELTZER,
Chief Tool Engineer
Bell Aircraft Corp.,
Buffalo, N. Y.

A Tough Spot for a Spring, too!

UNCLE SAM'S anti-aircraft guns make the skies a tough spot for enemy planes, but these fast-firing guns are also tough on their own component parts.

The recoil springs, for example, must absorb the terrific kick of powerful shells many times per minute—function flawlessly, despite the intense heat generated by such rapid and continuous action—and combat that arch enemy, corrosion, at all times. But Muehlhausen Springs are doing this remarkable job—for they are designed, fabricated and tested to meet the most rigid requirements; have that extra strength and stamina to take a real beating under all conditions.

If your product has a tough spot for a spring of any type—compression, extension, torsion or flat—consult Muehlhausen. For quick action—call, wire or write today. MUEHLHAUSEN SPRING CORPORATION, 817 Michigan Avenue, Logansport, Indiana.

MUEHLHAUSEN
SPRINGS
EVERY TYPE AND SIZE

FREE! SEND FOR INFORMATION

- New Die Spring Bulletin illustrates, describes 206 sizes and types of die springs.
- New Armament Bulletin shows importance of springs for many types of war equipment.

This Industrial Week . . .

- **Auto Men Oppose Steel Budget Plan**
- **Ingot Output Hits New Peak at 100 Per Cent**
- **Winter Scrap Stocks Still Small**
- **Geneva Plant to Make Steel in May**
- **National Emergency Steels Gaining**

DISCLOSURE of outlines of the War Production Board Iron and Steel Branch plan for material allocation has been followed by a counter-program from the automobile industry. Thus, the major producer of the principal war material, steel, is now in conflict with the major producer of war weapons, the automobile industry, over the basic problem of how war materials will be distributed to war plants.

Earlier differences over the proposed system of steel distribution—the Steel Budget Plan—evidently were nothing more than sideline disputes which put its supporters into shape for really heavy opposition. (The automobile men who traveled to Washington to oppose the Steel Budget Plan looked heavy.)

At midweek it was clear that the sudden dislike of the automobile industry to the steel budgeting plan came as a surprise to the steel manufacturers and to many in the WPB organization. (Guessers that the Steel Budget Plan will go into effect about Jan. 1 are likely to go into hiding until the air clears.)

WPB's plan and the automobile industry's plan for steel distribution differ sharply. The WPB Steel Branch Plan—the result of some high-powered thinking by many steel men and war leaders for at least nine months and the beneficiary of priority experience gained by British steelmakers—begins with the placement of orders with manufacturers by the government. Recipients of orders would then come before WPB and detail their needs for materials after which allocations of steel would be issued, based on the needs and upon available capacity.

For latest information about priorities, allocations, and forms, see the seventh edition of The Iron Age War Priorities Guide in the Oct. 8 issue of THE IRON AGE.

NOW spokesmen for the Automobile Plan bluntly claim that the Steel Budget Plan will disrupt arms production. The plan submitted by the Automotive Council for War Production requires filing with WPB by armament manufacturers of bills of materials, showing unit quantities needed for each finished war product. This information would be correlated by WPB with its own information on capacity and availability of facilities. Production orders would then be placed within the limits of the material's availability.

Both the Steel Budget Plan and the Automotive Material Plan, however they differ, arise from a general dissatisfaction with the workings of the present Priority System. They have in common the abolishing of so-called priority inflation.

The orders themselves would be authority to manufacturers to procure needed materials. Then, after the orders for materials were placed, checks would be made in Washington against the master bill of material, thus effecting a policing of the system.

ONE difference between the Steel Budget Plan, which high WPB officials and Bernard M. Baruch are said to approve, and the Automotive War Materials Plan, is the time at which production requirements would be presented and justified before WPB. The Steel Branch plan would interpose the justifying of the materials requirements between receipt of the production order and placement by that manufacturer of his releases in material.

The Automotive Plan would have production orders followed immediately by releases to materials suppliers, with these releases justified later while production is actually under way. Automotive sources contend that the placement of releases to suppliers cannot be held up while the manufacturers plead their cases at Washington. If all material allocations must be justified after receipt of manufacturing orders, some automotive men claim, the entire distribution system will bog down in failure.

Automotive-arms industry spokesmen against the Steel Budget Plan included C. E. Wilson, of General Motors; A. M. Wibel, of Ford, and other highly placed men. Ferdinand Eberstadt, WPB production chief, and others heard their story. At Washington it was said that the Steel Budget Plan had been held up and that Washington and industry now had two master plans for material distribution to discuss. A committee has been appointed to determine which plan shall be adopted.

REGARDLESS of how steel is to be distributed it is clear that steel manufacturers in the U. S. are making more of that metal than ever before. Steel production for the nation this week gained a half point to 100 per cent of capacity, the highest mark since the week of last April 30. Since production rates in the earlier part of this year were figured on a somewhat smaller capacity, ingot output is at an all-time high at above 1,700,000 tons for the week.

With scrap reservoirs rising each day by thousands of tons as a result of the national effort to collect household scrap, variations in the rate of steel production will be watched hereafter by millions of scrap donors, who will have a part, however small, in lifting the rate to capacity.

At Cincinnati, steel production this week jumped four and a half points to 105 per cent, while St. Louis rose by the same amount to 111.5 per cent. Cleveland steel operations climbed four points to 101 per cent

and Chicago advanced to a point to 103.5 per cent, with Philadelphia production a half point higher at 93.5 per cent. Detroit steel production slumped 10 points to 97.5 per cent. Youngstown melting schedules have held another week at 99 per cent. At Buffalo, an important scrap consumption center, the fact that allocations of scrap to mills had ceased was credited to the success of the public drive.

Reports to THE IRON AGE from steel centers show that little of the donated household scrap has yet been melted, since weeks will pass before it arrives at the mills.

Steel mill purchasing agents are now being required to explain many times daily why they cannot buy scrap collected from public drives. Many cities are endeavoring to sell direct to the mills, apparently not realizing that the scrap collections must be extensively processed before being suitable for open hearth furnace use. Some mills are processing small quantities of ungraded scrap, but none are able to begin handling the tonnage of public scrap offered them. Industrialists and newspapers can aid this drive if they will point out to their local scrap drive chairmen that household scrap must pass through a scrap dealer's yard for processing before the mills can charge it into open hearth furnaces.

HALIFAX AND MIKE: The British ambassador, instructed by a workman, looks into an open-hearth furnace at the Carnegie-Illinois Steel Corp.'s Homestead works.

SO far, little headway has been made in building up winter stocks of scrap, but mill operators are encouraged by knowledge that large accumulations of old metal have already resulted from the industrial and household scrap drives.

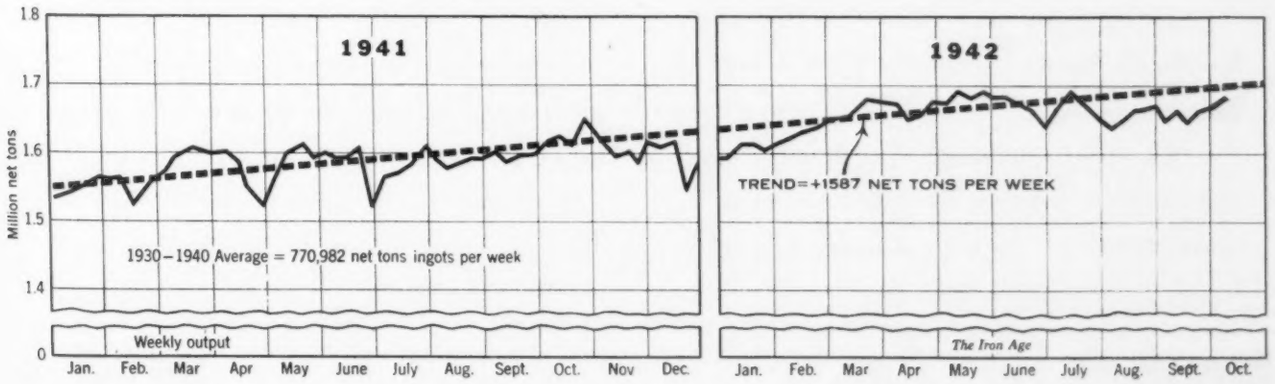
Emasculation of the much publicized War Materials, Inc., the government agency organized to salvage scrap beyond ceiling prices, is a discouraging development on the scrap front. At midweek some industrial observers also were concerned lest failure to map out details of the scrap drive beyond the initial collection stage may result in considerable public disillusionment.

See page 81 for full details of the efforts to scuttle War Materials, Inc. Turn to pages 116-117 for other scrap developments.

On the bright side of this week's industrial news is the announcement that Columbia Steel Co.'s new Geneva steel plant near Provo, Utah, will be turning out steel by next May, considerably ahead of schedule. The first open hearth furnace at this plant is to be lighted in May, and the structural and slabbing mills are to be rolling in June. The Geneva plant, which will be among the nation's large plants, will cost $150-million.

THE Defense Plant Corp. has inaugurated a building program for 28 detinning and metal shredding plants to be built in various cities. Contracts for these plants have already been let to the H. K. Ferguson Co., Cleveland. The plants will be leased to various companies, two of which are Vulcan Detinning Co. and Metal and Thermit Corp., according to a program which is still in the paper stage, with exact plant locations yet to be decided.

Progress is being made in the use of National Emergency steels, according to reports to THE IRON AGE. More than 326,997 tons of NE steels have been scheduled by the alloy producing companies. Steel producers scheduled 211,076 net tons of NE steels and WPB directed electric furnace operators to melt 115,921 net tons. During July, 4757 tons of the NE series 8000/8500 and 32,376 tons of NE 8600/8900 were put on mill schedules. During the same period, WPB, through its form PD-391, scheduled 297 tons of NE 80/8500, 5556 of NE 86/8900, and 22,001 of NE 8000/8900 for a total of 64,997 tons.



Steel Ingot Production by Districts Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	S.Ohio River	West	St. Louis	East	Aggregate
October 8	100.5	102.5	99.0*	93.0	97.0*	104.5	87.0	98.0	107.5	95.5	102.0	107.0	95.0	99.5
October 15	100.5	103.5	99.0*	93.5	101.0	106.5	87.0	98.0	97.5	105.0	102.0	111.5	95.0	100.0

* Revised

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FROM AN ORIGINAL DRAWING BY ORISON MACPHERSON

BLOOMING MILL MEN PACE WAR STEEL PRODUCTION

As easily and swiftly as U. S. Army men handle big tanks, steel workers at the controls of their blooming mills skilfully maneuver massive steel ingots through the rolls. In a minute of great pressure, with thundering noise and fireworks, the white-hot steel blocks weighing many tons are reduced to blooms and slabs that move on through other operations. The finished steel products are shipped to thousands of other manufacturers to become ships, shells, tanks, guns, planes, bombs.

Blooming mill men in America's steel industry are operators of great gateways through which millions upon millions of tons of steel roll on to war. They are meeting this responsibility splendidly by all-time production records.

In this industry effort, J&L men in the blooming mill departments of the Aliquippa, Otis and Pittsburgh works are rolling ingots of controlled quality war-steel at highest record rates in the history of the three works. There is no time being lost or material wasted on the steel front.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

PARTNER TO INDUSTRY IN WAR PRODUCTION

J&L STEEL

WPB "Shellfire" Threatens To Sink War Materials, Inc.

Pittsburgh

• • • **Born a few weeks** ago with high hopes, staffed by some of the nation's best executives and scrap men, supported by the steel industry and scrap industry, and depended upon for action by all those realizing the seriousness of the nation's scrap problem, War Materials, Inc. last week was scuttled and reduced to a mere shell by Donald Nelson's war production board.

Only a few weeks ago Mr. Nelson had given War Materials, Inc. broad powers in attempting to salvage scrap which was beyond the existing ceiling prices. In a complete change of heart, Nelson, last week, in one stroke reduced the war materials to the status of a banker and claimed that considerable confusion had existed between the policies of the WMI and his own scrap salvage branch.

Bearing the earmarks of WPB politics which many times represent face saving measures and petty jealousies, the "cease and desist" manifesto to WMI in reality puts the WPB in the unenviable position of inferring that the nation's scrap supply is not precarious and that the nationwide drives with the help of the WPB's salvage branch can obtain enough scrap and only call on WMI as a banker to arrange the necessary papers.

Such a viewpoint differs sharply with that expressed by steel executives and iron and scrap authorities. The effort of WMI to obtain the highest caliber personnel—those who know business as well as the scrap situation—was looked upon as a sure way to quickly obtain large tonnages of heavy scrap not available at ceiling prices. It is believed in responsible circles that the WPB Salvage Branch which had hundreds of special projects listed has been smarting under the possibilities that WMI would do a good job where one had not been done before. This is borne out upon reliable information that the special projects department of WPB salvage division has bucked the SMI since it was first formed and in one instance refused to open its books of special projects to the WMI.

MARINE AMPHIBIAN TRACTORS: A special leatherneck unit (photo at top of page) are training with new amphibian tractors at New River, N. C. (Photo by OWI).

The neutralizing of the WMI has put the steel industry and the scrap industry of the country to the impossible task of understanding why a first rate "strictly business" organization should be set up to obtain badly needed scrap and within a few weeks be reduced to such an extent that wholesale resignations are expected in the near future, among which might be that of WMI's hard-hitting president, J. M. Hopwood, who was convinced to take the job only on the basis that he could do a "good" job.

For details on the WMI setup see IRON AGE, *Sept. 17, page 97.*

Probably one of the tragedies which will be a by-product of Mr. Nelson's decision to emasculate the WMI will be the final disposition of commitments made to high caliber executives throughout the country who are technically already on the WMI payroll but who will now soon find themselves without a job. Practically all of these men either returned from

retirement had severed their business connections and in many cases had made considerable personal sacrifice involving moving away from home, being separated from families, or diving into a new work on the basis of a serious national emergency.

These conditions were undoubtedly the reason why WMI was one of the first governmental agencies completely staffed by those carrying qualifications involving both metal working industrial experience as well as practical scrap collecting, selling, and consuming experience.

It now looks as if this effort will be completely scrapped and WMI will need but a small office force to perform its "banker" functions —without having ever had a chance to show what it could do in the way of getting out scrap.

No public announcement of the real facts is expected to be made, owing to the nature of the backstage WPB politics which are believed to have precipitated the killing of the latest governmental agency. Only silence greeted the questioning of WPB and WMI officials up to Tuesday of this week.

WMI Office Closed In Surprise Move

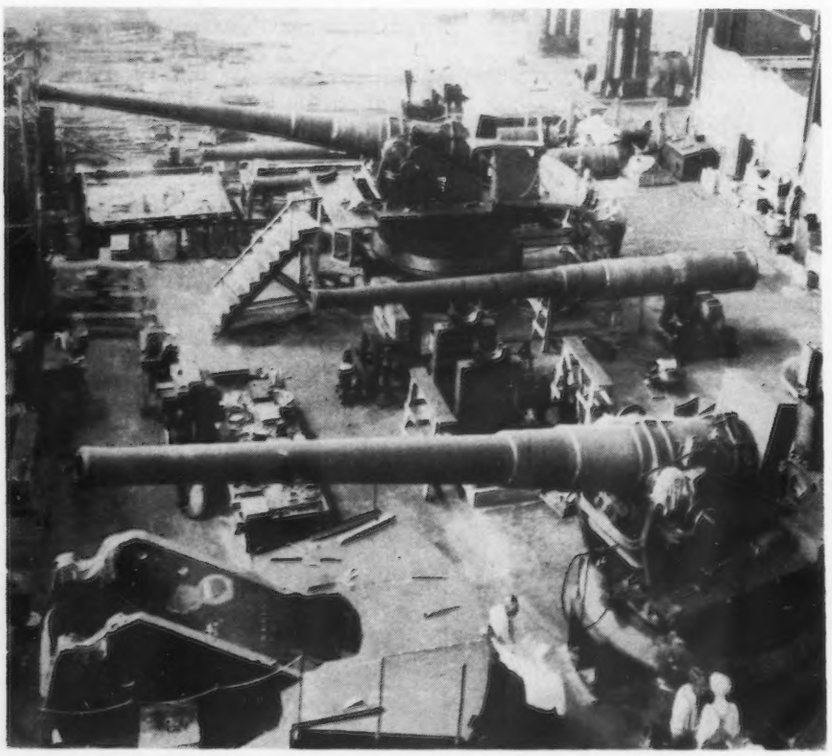
Philadelphia

• • • **In a totally unexpected** move, the district office of War Materials, Inc. was closed here this week. This move, ordered by J. M. Hopwood, director of WMI, apparently came as a result of the meeting of RFC, WMI and WPB officials last week in Washington for the purpose of discussing overlapping of WMI and the special projects division of WPB—both engaged in getting-in high cost scrap.

Last minute news from Washington, however, suggests that the final decision of the meeting was simply to separate the duties of the two organizations so that the WPB branch would act as the scrap locating unit while the WMI is to act as the buying agency.

Closing of the local office here removes E. S. Higgins, president of the Yellow Cab Co., of Philadelphia from the scrap picture until the picture clears. Mr. Higgins was the head of the local WMI office and a well known Philadelphia business man.

LOOK OUT JAPS: These big guns for coast defense are shown being installed in gun mounts at the Baldwin Locomotive Works. The mounts, which weigh 250,000 lb. each, are built from steel castings produced in Baldwin foundries.



Rust Furnace Completes Four Month Job in 47 Days

Pittsburgh

• • • **An example** of speedy wartime engineering, in which The Rust Furnace Co., Pittsburgh, Pa., designed and furnished materials for several industrial furnaces for an across-seas naval base in the unusual time of 47 days, was revealed last week with permission of the U. S. Navy.

A rush order by the Navy for the furnaces, which had to be especially designed for their purpose, was received by The Rust Furnace Co. in the form of a telegram on the fourth day of an unspecified month. The order required delivery of the material in the phenomenally short period of 60 days. Usual time for such a job would have been four months.

To meet this urgent need, Rust Furnace called on every man qualified for the work in its organization, regardless of other projects on which they had been engaged at the time. Plans were rushed to completion in day and night work, and material ordered as portions of the plans were finished.

By the 10th of the month, electrical equipment had been ordered; by the 12th, control items; and by the 13th all structural steel had been detailed and ordered. On the 20th the drawings were completed and all critical material had been purchased.

By the 20th of the following month the material was ready, 13 days before the expiration of the 60 day specification.

New Government Manual Now Being Sold at $1 a Copy

• • • **Copies** of the fall, 1942, edition of the United States Government Manual, are just off the press. In New York City the Bureau of Public Inquiries, OWI, 521 Fifth Avenue, is selling them at $1 per copy.

From the text of the Constitution of the United States with 21 amendments to an appendix of abolished Federal agencies, the streamlined gray-covered Manual covers a vast informational area ranging from the Congress to the National Zoological Park, and from AAA (Agricultural Adjustment Agency) to WDC (War Damage Corp.). Regional offices of the WPB and OPA are included.

NE Steel Shipments for Tests Authorized by WPB

• • • **Seventeen alloy steel** producers have been notified by Ernest C. Kanzler, WPB director general for operations, of a plan to facilitate distribution of sample quantities of the new National Emergency steels for experimental purposes. In a letter to producers Mr. Kanzler said:

"In order to test and facilitate the delivery of experimental lots of the new National Emergency steels and other alloy steels covered by Order M-21-a, you are hereby permitted to ship in the fourth quarter of 1942, samples of the steels described in Table L of "Contributions to the Metallurgy of Steel—No. 8," published September, 1942, by the American Iron and Steel Institute, to any manufacturer or laboratory, without regard to preference ratings. Such steel is to be shipped direct and may be taken from current mill production, or from stock.

"Each manufacturer or laboratory ordering such steel from you shall certify on his purchase order that such steel is to be used in making tests; that the amount ordered, added to the amounts already received or on order from other sources, will not amount to more than 1000 lb. of each composition; and that the total amount of all compositions of such steel on hand and ordered for testing purposes does not exceed 3000 lb. of steel. The limitation on amounts to any one manufacturer is for the fourth quarter of 1942.

"No orders for such steel for testing purposes shall be accepted unless such orders are approved as to composition and amount by your metallurgical staff. . .This authority is to be in effect until Dec. 31, 1942."

72 Workers Honored by T.C.I.; One Gets Rare Medal

Birmingham

• • • **Seventy-two employees** of Tennessee Coal, Iron & Railroad Co. were awarded service medals in the third quarter of 1942. One medal was awarded for 50 years of service, four for 45 years, five for 40 years, 10 for 35 years, 14 for 30 years and 38 for 25 years.

The rare 50-year medal was awarded Angus R. Brown, superintendent of ventilation for the company's coal mines division.

Press Assoc. Inc. Photo

APPOINTED TO OES: These six men, drawn evenly from Industry, Labor and Agriculture, were appointed Oct. 7, by President Roosevelt to serve on the new Economic Stabilization Board which is headed by ex-supreme court justice James F. Byrnes, who is now director of Economic Stabilization. They are, bottom, left to right: William Green, president, AFL; Phillip Murray, president of the CIO; James G. Patton, president, Farmer's Co-op Union. Top row, left to right: Edward O'Neal, president of the American Farm Bureau Federation; Ralph E. Flanders, president of Jones & Lamson Machine Co.; and Eric A. Johnston, president of the U. S. Chamber of Commerce.

SUPER-SHELTER: This is the entrance hall to one of London's newest air raid shelters. London is building eight such shelters, each capable of accommodating just over 8000 people. Sleeping accommodations, canteens, medical centers and full lavatory facilities are provided. Large clear spaces can be arranged for social gatherings and entertainment.

British-Combine Photo

Auto Firms Given Surplus Steel Plans

Detroit

• • • **A program** for the loosening of surplus inventories of steel held by manufacturing companies was presented recently in conferences at Detroit between automobile concern executives and the WPB Materials Redistribution Branch, represented by E. A. Tupper. This program will be carried out through the new Steel Recovery Corp.

If the steel in the hands of the companies is in mill shapes, it can be moved as is, at close to the regular established prices for such shapes. But if it is fabricated or semi-fabricated, as much of the inventoried material is said to be, it will be movable by one of several means.

The government would prefer to see the material sold as scrap and moved through regular scrap channels. A variant of this proposal would provide for a straight arithmetical advance over scrap prices, a hard-and-fast price proportion, thus set up in order to reduce form-filling and bookkeeping to a minimum.

The third option would be to sell the material to Steel Recovery Corp. at the lowest base prices for that shape or alloy as fixed by SRC. In such cases, presumably, the SRC would resell the material as scrap, inasmuch as it is nearly all useless in its semi-fabricated or fabricated state for purposes other than those intended for it, and would absorb the loss.

A fourth option would permit the company to dispose of its inventory at the regular program price set by SRC, on the basis of the content and type of steel, varied according to forms, sizes, etc.

If none of these options is acceptable to the company, then the government would requisition the steel, offering in payment the program price established for option four. If this offer was refused, the SRC would then turn over half of this amount to the company, which could then file suit for whatever balance it felt was due.

These alternative proposals were made in advance of the full program, which will not be in full swing for several months, in an effort to simplify the reporting necessary to move material of large holders quickly into war uses.

Industry reaction to the program was guarded. Disposal of much semi-fabricated or fabricated steel at the best prices offered by any of the options was expected in many instances to result in substantial dollar losses to firms holding large inventories.

—War Worker . . .

Ford Installing Briquetting Facilities

Detroit

• • • **New facilities** for briquetting are rapidly being installed at the Ford Motor Co. Rouge plant. Later this month is expected to see four machines briquetting machine shop turnings produced in other shops at the Rouge. The capacity of each machine runs around 60 tons a day.

Conversion of a briquetter formerly used for cast iron is planned for the near future to augment this battery and three other machines used in various Ford buildings may be installed later. If all these installations are completed, Ford's capacity would run around 500 tons a day on briquets.

Inland Sets New Records

• • • **New 24 hr. and** eight hr. records have been made by Inland Steel Co.'s 28-in. structural mill at Indiana Harbor. During the same period, the mill's finishing department exceeded by 32 per cent its former cutting record for 24 hr. Inland credited its rolling record to a group of workers whose average age is 47 years.

WLB Gets U. S. Steel Subsidiaries' Case

Pittsburgh

• • • **Added to the** headaches of the War Labor Board is an additional one involving non-steel producing subsidiaries of the U. S. Steel Corp. which are petitioning the board for a ruling to determine their status in the so-called "little steel" wage decisions.

Steel producing subsidiaries of the U. S. Steel Corp. were recently ordered to comply with previous WLB orders as brought out in the "Little Steel" case, but the position taken by the non-steel producing subsidiaries of U. S. Steel, such as American Bridge Co., Virginia Bridge Co., Scully Steel Products, etc., has been that their entire wage situation is intimately tied up with the conditions prevalent within their own industry.

In other words, the American Bridge Co. is carying on a business which conforms to the steel fabrication industry and as such believes a specific WLB ruling should be available before wage increases demanded by United Steel Workers of America are granted.

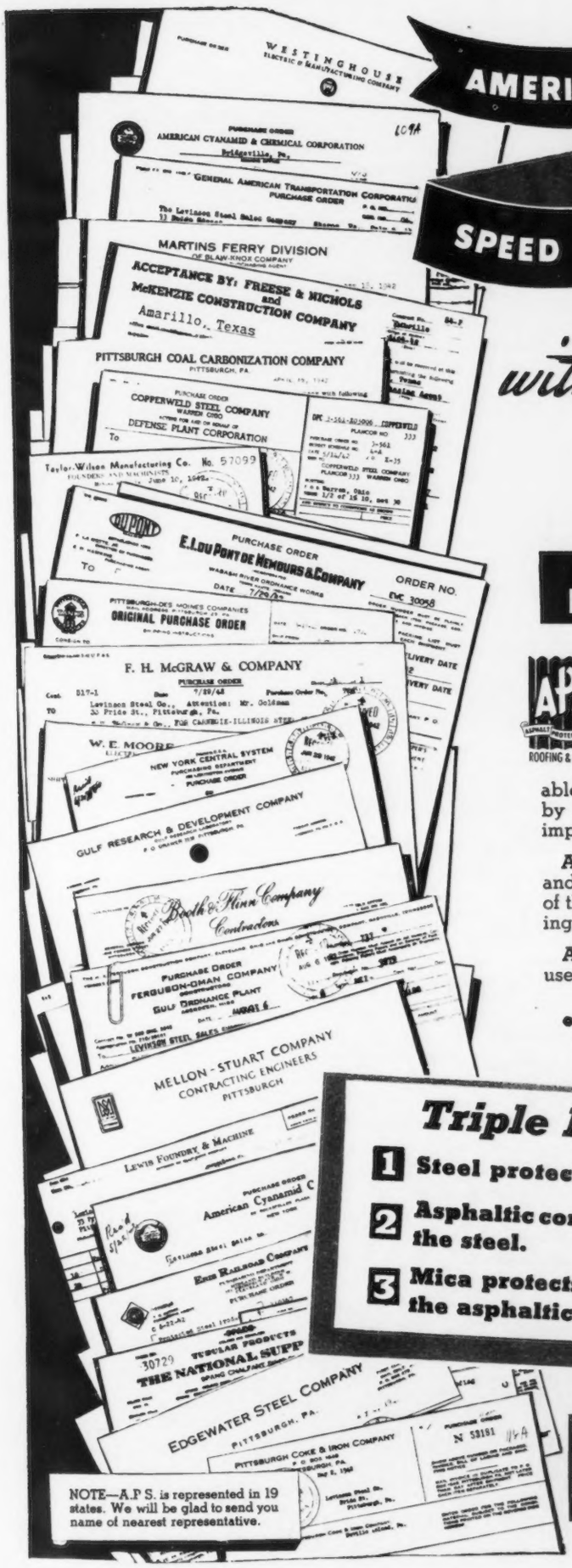
The same set of circumstances applies with respect to the corporation's cement and other subsidiaries. Action is expected soon on these questions after the various specific steel company cases are settled.

New Sound and Color Film Helps Train Lathe Operators

Madison, Wis.

• • • **A new sound** and color motion picture titled "Turret Lathes —Their Operation and Use" has been completed by the Gisholt Machine Co. and is available without charge for use by recognized trade schools, technical schools and manufacturers.

The film, produced by Burton-Holmes Films, Inc., is designed to aid in training new machine shop employees. Subject matter covered includes a comparison of the turret lathe with other metal working machines and detailed sequences illustrating the basic types of work done on a turret lathe and the production methods followed in each case. Further information on the film is available from the Gisholt Machine Co., 1215 East Washington Ave., Madison, Wis.



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ASPHALT PROTECTED STEEL ROOFING AND SIDING

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Here's a Roofing and Siding that has won the instant favor of the country's leading industries for speedy, economical war-time construction. **A.P.S.** is an asphaltic coated product . . . rugged, durable, weather resistant, easy to erect and quickly available! Its resistance to extreme climatic conditions is proven by A.S.T.M. laboratory test methods, and in addition it is impervious to acid fumes and acid gases.

A.P.S. is obtainable either flat or corrugated. Corrugating and forming operations are performed after the application of the protective coatings. It is furnished in all types of flashing, ridge roll, gutters, etc.

A.P.S. complies with Army specifications and is being used for U.S. Army Ordnance Construction.

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1. **Steel protects the structure.**
2. **Asphaltic compound protects the steel.**
3. **Mica protects and reinforces the asphaltic compound.**

NOTE—A.P.S. is represented in 19 states. We will be glad to send you name of nearest representative.

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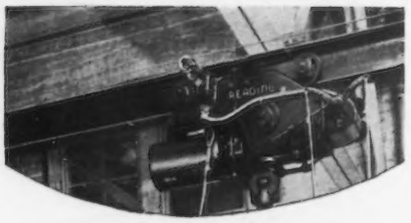

How to keep

PRODUCTION UP!

When a product must be transferred from one process to another, the job must be done *continuously*. There is no time for repairs or breakdowns that might interrupt several related processes.

For instance, this 1-ton Reading Electric Hoist was installed in a paint manufacturing plant to help keep production UP, to safeguard quality control and to save valuable man-hours.

Is there a similar place in your plant where a Reading Hoist could provide the trouble-free operation that keeps production running smoothly?

"Modern Materials Handling Magic" is a new 16-page booklet that can help you get the most from every dollar you invest in hoist equipment. A note on your company letterhead will start a copy on its way to you.

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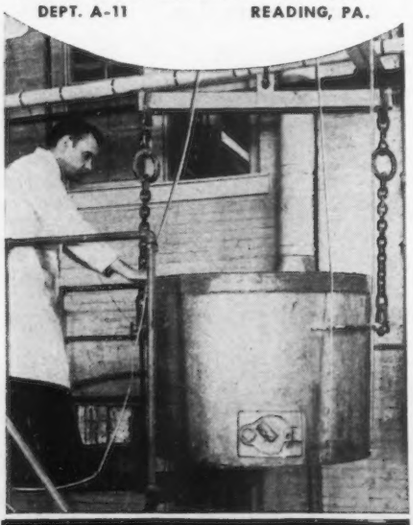
DEPT. A-11 READING, PA.



READING
Chain Hoists, Electric Hoists, Cranes and Monorails

Armstrong Made Chief of New Foreign Liaison Branch

Washington

• • • **Thomas R. Armstrong,** associate head of the producing department of the Standard Oil Co. of New Jersey, was appointed recently as Chief of WPB's newly created Foreign Requirements Liaison Branch. Mr. Armstrong will maintain liaison between WPB and the Board of Economic Warfare, Lend-Lease and all other agencies concerned with foreign purchases or requirements.

In addition, Mr. Armstrong will review all other purchases by, or on behalf of all foreign governments, following and expediting the preparation and presentation of their requirements estimates to meet the specifications and time schedule of the Program Coordination Division. The Program Coordination Division was established last week to recommend an integrated over-all national program to WPB's vice-chairman of Program Determination, Ferdinand Eberstadt.

Mr. Armstrong is a director and vice-president of such Standard Oil overseas subsidiaries as Creole & Logo Petroleum Corp., the European Gas & Electric Co., and Pan American Foreign Co.

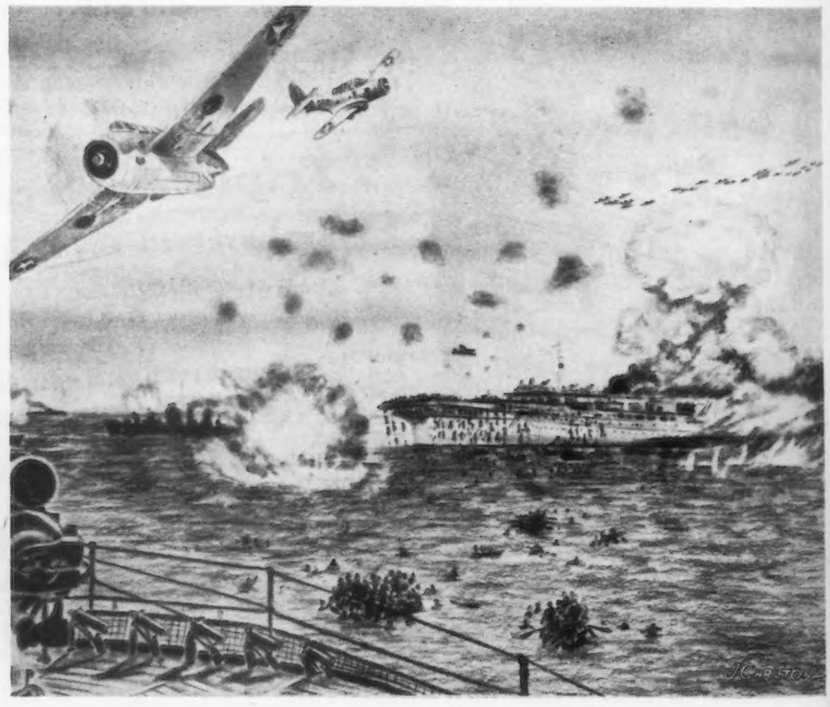
Norton Co. Produces Four Training Films on Grinding

• • • **A series of four training** films entitled "Lessons in Grinding," have been produced by the Norton Co., Worcester, Mass. They are available for distribution to industrial apprentice schools, Army and Navy training schools and all other schools where machine shop practice is being taught. The films are intended to present the basic fundamentals of grinding in a way that the inexperienced man can understand.

The film subtitles are: Cutter Sharpening, the Cylindrical Grinder, the Surface Grinder and the Grinding Wheel, Its Care and Use. All are sound films on 16 mm. Kodachrome color stock. For one time showings, there will be no charge except for return transportation. Films sell at a cost of $73, $102, and $88 respectively and vary from 14 to 20 min. in projection time. Five other Norton films are also available on abrasives.

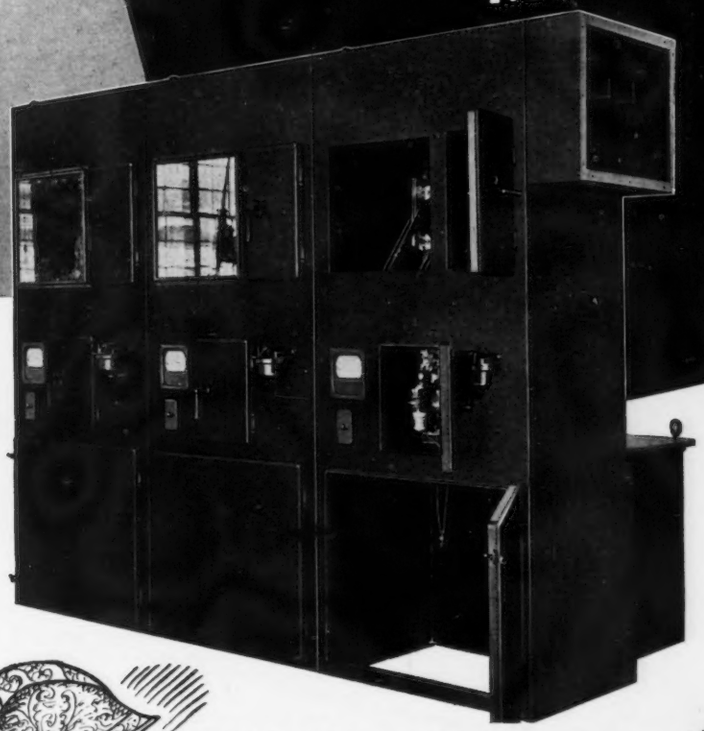
LAYING EGGS OF VICTORY: John A. Carlton's conception of a Pacific sea battle brings home the effectiveness of the Navy dive bomber. Here they are shown bombing the decks of a Jap aircraft carrier, setting it afire and forcing the crew to abandon ship.

Wide-World Photo



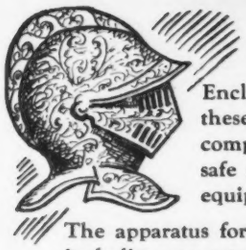
EC&M Steel-clad MOTOR CONTROL

★ SAFE for Operators ★ SAFETY for Equipment, too



● *At the left:* Control units for 3-500 HP, 2300 Volt Synchronous Starters. EC&M Oil-immersed ZHS Contactors mounted in back.

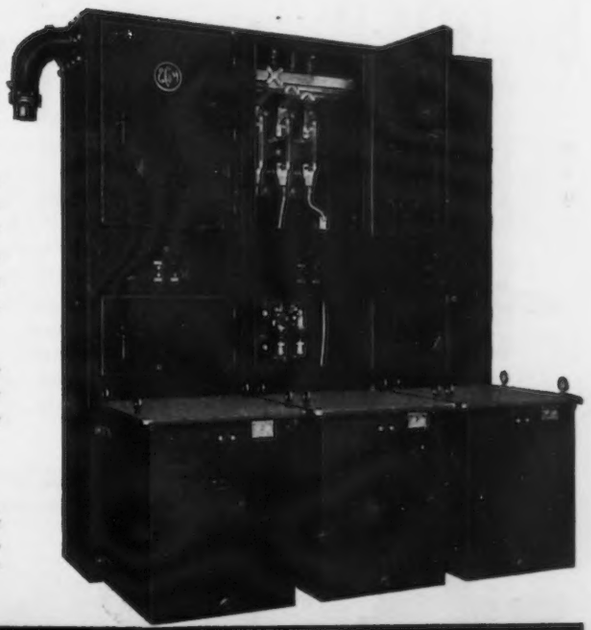
● *Below:* For 3-100 HP, 2300 Volt Squirrel-cage Motors. EC&M heavy-duty ZHS Contactors in oil tanks at front.



Enclosed for safety, complete in every respect, these EC&M Steel-clad Motor Controls give you a compact, easily installed assembly that is attractive, safe and gives full protection to both men and equipment.

The apparatus for each motor is as complete as you like it: including accurate motor protection by EC&M Type ZM Overload Relays - meters - automatic field-switching mechanism for synchronous motors - disconnect switches - self-contained push buttons - enclosed bus feeding all units - self-contained potheads for quick connection and many other features that make a neat-appearing, safe installation.

Booklet 67 shows many illustrations of EC&M Steel-clad Control for single-motor installations - for group-motor jobs - for adding individual units to existing installations, etc. Write for your copy to-day.



The EC&M Type ZHS Contactors used in these full voltage starting applications are of heavy-duty construction and have high arc-rupturing capacity. They are described in Bulletin 1062.

THE ELECTRIC CONTROLLER & MFG. CO.
CLEVELAND, OHIO

THE ELECTRIC CONTROLLER & MFG. CO.

2698 E. 79th Street — Cleveland, Ohio

WPB Tightens Control on Air Raid Protective Devices

Washington

• • • **Requests for** the use of critical materials to be used in air raid protective devices for war plants will be granted in the future only after consultation with WPB's Resources Protection Board. WPB said that this decision had been made in the face of increased nation-wide demand for blackout ventilating equipment, dim-out lighting fixtures, alarm systems, fire extinguishing equipment, steel fences, camouflage paint and other items using critical materials.

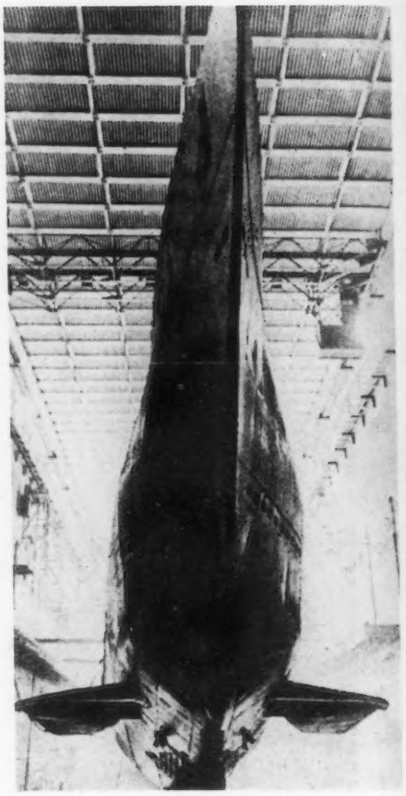
"This demand has grown to huge proportions and cannot possibly be met without diverting quantities of steel, brass, copper and other important metals from direct war uses which are more immediately urgent," said the WPB announcement. "The possibility of occasional bombings cannot be allowed to curtail unnecessarily the flow of critical materials to plants now making vital military items.

"However, it is important to achieve a maximum of protection where this does not interfere with the need for critical materials. Consequently, owners and operators should make every effort to install protective equipment which does not involve such materials.

"The WPB, therefore, has issued instructions that preference ratings be denied for critical material or equipment which is intended for protection purposes except in special cases and then only after consultation with the Resources Protection Board.

"The Resources Protection Board, under the chairmanship of William K. Frank, is making an over-all study of the relative importance to the war effort of all plants, installations, communications networks, mines and natural resources. After determining the importance of facilities the Board applies comparative ratings for the nation as a whole."

The RPB consists of representatives of the War Department, Navy Department, OCD and WPB.



International News Photo

SECRET PHOTO: This photo, copied from an Italian publication and transmitted to this country by a neutral, is said to show a Nazi submarine nesting in a steel and concrete dock along the Atlantic coast. The dock, which is described in the Italian caption as being protective, is presumed to be bomb proof.

Alabama Industries Group Will Hear Henderson

Birmingham

• • • **Leon Henderson,** chief of OPA, and Francis B. Sayre, U. S. high commissioner of the Philippine Islands, are scheduled to be among the speakers at the annual meeting of Associated Industries of Alabama. The association will hold its annual meeting here on Thursday, Oct. 29.

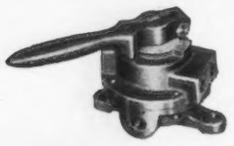
Charcoal Shortage Appears

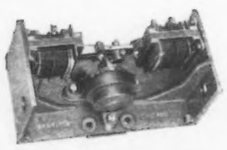
• • • **The Buffalo-Niagara Falls** area is coping with a charcoal shortage due largely, suppliers report, to the fact that for some time the charcoal requirements of war plants have been met before the retail trade is supplied. Recent severe temperature drops have accentuated demands for charcoal for household use.

Choose.. from this complete line

Hannifin Air Control Valves offer a complete range of choice in hand and foot operated models, providing positive, accurate control of air operated equipment in any type of application. All models have Hannifin disc-type design—no packing and no leakage or packing maintenance troubles. The bronze disc that controls air flow is ground and lapped to form a perfect seal with the seat, which is similarly finished.

Hannifin Air Control Valves are made in 3-way and 4-way types, hand and foot operated, manifold, spring return, heavy duty rotary, electric, and special models for any air control purpose. Write for Valve Bulletin 57-A with complete data on all types.





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Arc Welding Study Awards Made by Lincoln Foundation

Cleveland

• • • **Awards totaling** $200,000 were made in the second nation-wide industrial study of arc welding by the James F. Lincoln Arc Welding Foundation this week. The first award of $13,700 in the industrial progress program was made to Captain C. A. Trexel and A. Amirikian of the U. S. Navy, Bureau of Yards & Docks, Washington, for a study on caissons for Naval drydocks, showing that arc welded construction would save more than $5,000,000 on caissons built, under contract, or about to be contracted for.

The second award of $11,200 was received by John L. Miller, chief metallurgist of the gun mount division of Firestone Tire & Rubber Co., Akron. His subject concerned the redesign for welding the 40-mm. Bofors anti aircraft gun.

Some 408 awards were made to 458 recipients for the papers submitted to the Lincoln Foundation. The Foundation, formed in 1936 in honor of James F. Lincoln, president of Lincoln Electric Co., Cleveland, made the awards after a 2½ year study, which resulted in a possible annual saving by arc welding of $1,825,000,000, which includes 7,000,000 tons of steel valued at $271,000,000 and 153,000,000 man hours of labor, according to an official of the Foundation.

Field Made Chairman of Powdered Metal Institute

Detroit

• • • **Formation of the** Powdered Metal Institute, with headquarters in Saginaw, Mich., was announced last week by A. J. Langhammer, president of the Oilite Division of Chrysler Corp. The purpose of the institute is to serve as an advisory council and aid to the Army and Navy in regard to adapting powdered metal to war production. It is pointed out that powdered metallurgy may make it possible to break many bottlenecks, or pending bottlenecks, due to possible shortages of materials or manufacturing equipment.

Chairman of the new Institute is L. E. Field, vice-president of the U. S. Graphite Co., Saginaw. Other officers are: vice chairman, Mr. Langhammer; and, secretary, E. S. Patch, sales manager of the Moraine Products Division of General Motors, Dayton.

These companies are members of the Institute: United States Graphite Co., Saginaw, Mich.; Bound Brook Oilless Bearing Co., Bound Brook, N. J.; Chrysler Corp., Amplex Div., Detroit; Moraine Products Division, General Motors Corp., Dayton; Johnson Bronze Co., Newcastle, Pa.; Stackpole Carbon Co., St. Marys, Pa.; Keystone Carbon Co., St. Marys, Pa.; Henry Crowley, Inc., West Orange, N. J.; P. R. Mallory and Co., Indianapolis, Ind.; General Laminated Corp., New York, N. Y.; Powder Metallurgy, Inc., Long Island City, N. Y., and American Sinteel Corp., Yonkers, N. Y.

GRAND PRIZE WINNERS: Capt. C. A. Trexel and A. Amirikian, co-winners of the $13,700 grand award in the Lincoln Foundation Welding Study. Their work was on welded caissons. Both are members of the U. S. Bureau of Yards and Docks. SECOND: Second grand award of $11,200 went to John L. Miller, chief metallurgist, Gun Mount Div., Firestone Tire & Rubber Co. His contribution was on the subject of welding 40 mm. Bofor gun mounts. THIRD: H. Thomasson, welding engineer for Canadian Westinghouse, Co., Ltd., was awarded third prize of $8,700 for work on a new type of mercury-arc rectifier used in welding.

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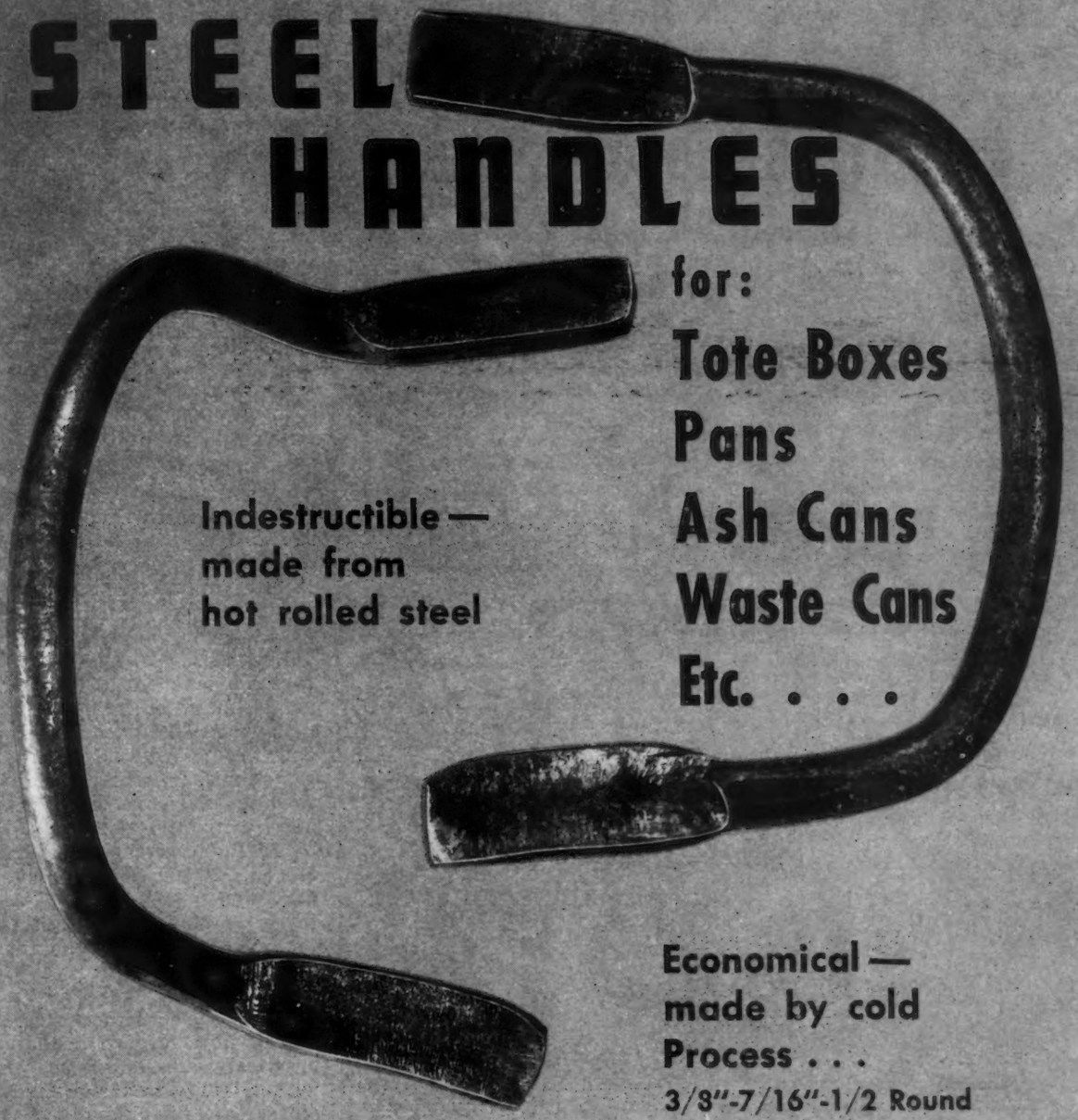
DETROIT and ANN ARBOR MICHIGAN
B-G-R PRODUCTS SERVE OUR COUNTRY-ON LAND, AT SEA, AND IN THE AIR

STEEL HANDLES



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This is no time for time-wasting methods

To win this war we've got to tighten up—toughen up. We've got to do in one hour the work of three. Old habits of slackness and self-indulgence must go—in the office as in the shop. We Americans have developed the methods. Now let's *use* them!

For instance: how many of you users of Dictaphone dictating machines have ever realized to the full all the time-saving advantages of Dictaphone dictation? Today, when minutes are precious and fateful, victory demands the self-discipline that will expend no useless effort—that will seek constantly for new short-cuts.

If you will make full use of your Dictaphone, work will flow more smoothly throughout your entire organization. Check your own methods on the list below:

☐ **Dictate whenever you please without requiring the presence of a secretary** ☐ **Give oral messages to your secretary via Dictaphone** ☐ **Protect yourself against interruptions by leaving your secretary free to intercept phone calls and visitors** ☐ **Use your Dictaphone for flash ideas** ☐ **Don't interrupt your associates needlessly—dictate memos instead** ☐ **Confirm telephone calls, oral instructions and reports by dictating to your Dictaphone on the spot** ☐ **Put conference high-lights on record** ☐ **Take your Dictaphone home and on trips—it's a "second secretary" always ready to go wherever and whenever you want.**

HELPING TO WIN THE WAR IS DICTAPHONE'S NO. 1 JOB TODAY

• To Dictaphone Corporation has gone the difficult task of making the precise and intricate mechanism required in the U. S. Army's remote control firing device for anti-aircraft guns.

This ingenious device enables the guns to get into action with deadly accuracy and almost incredible speed.

Thus the skill and precision developed in the manufacture of Dictaphone dictating machines are now contributing to the greatest task in all history.

Today, Dictaphone is also making Electricord recording-reproducing equipment for the U. S. Army, the Navy and other essential war services.

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Republic Blows In New Youngstown Furnace

Youngstown, Ohio

• • • **The new blast** furnace of Republic Steel Corp. here was blown in Oct. 12, 1942, almost a year to the day after the contract for its construction was signed. This furnace is said to be the first completely new unit to be built in the Mahoning Valley in nearly a quarter of a century, and is one of the largest furnaces ever constructed, having a daily capacity of 1100 tons of iron.

Built by Republic Steel Corp. for the Defense Plant Corp., this unit is the second of the Defense Plant Corp.'s blast furnace program to go into operation. The first, also a Republic furnace, was completed in Gadsden, Ala., and blown in on May 28. The new Youngstown furnace was built on the site of the old Republic No. 1, hand charged furnace, built in 1896 and taken out of operation in 1926.

Republic designed, engineered and supervised the entire construction, sub-letting part of the work to sub-contractors. The work of clearing the site started Oct. 27, 1941, and required the removal of some 20,000 tons of blast furnace flue dust which was stored there. On March 7, 1942, pile driving was started for the foundations and the first steel was placed on March 19.

One of the construction features of this new furnace is that it is practically a complete welded job with all plate work on furnaces, stoves, and gas handling equipment welded. In addition to the Gadsden and Youngstown furnaces, Republic has two more under construction which are a part of the DPC program.

Eastman Freezes Passenger Schedules

• • • **In a move to intensify** further the conservation of passenger train equipment, Joseph B. Eastman, Defense Transportation Director, issued an order "freezing" as of Sept. 26 all railway passenger schedules in the United States.

The order (General Order ODT No. 24), which becomes effective Oct. 4, prohibits railroads, with certain exceptions, from running any special passenger trains, or adding new trains to existing schedules.

War Plant Ads Ruled Deductible

Washington

• • • **Guy T. Helvering,** commissioner of the Bureau of Internal Revenue, in a six point statement of policy made last week, stated that the advertising budgets of war production plants would be recognized as a legitimate deduction for tax purposes.

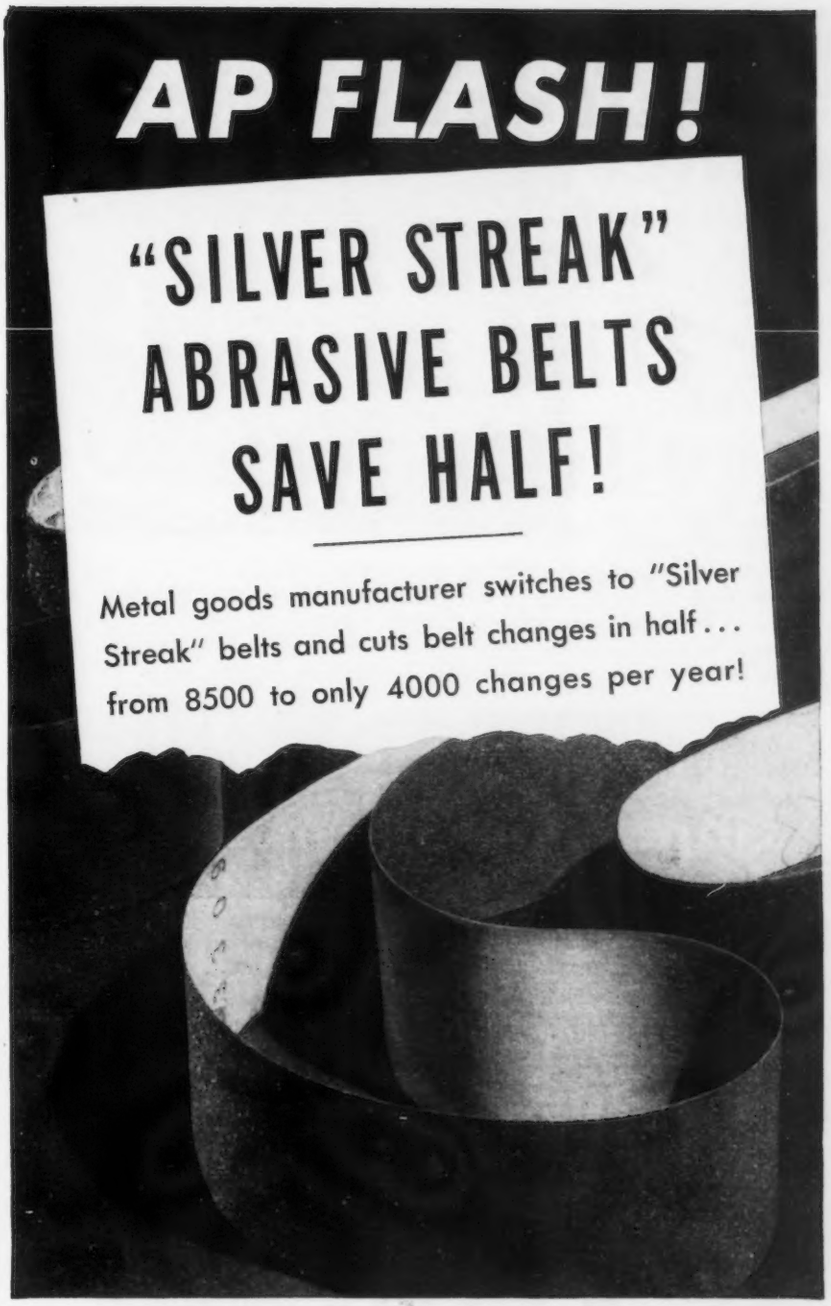
However, certain limitations were placed on the type of advertising that would be considered a legitimate deduction as outlined in the six point guide to determining allowable expenditures.

Mr. Helvering limited as follows:

"In determining whether such expenditures are allowable, cognizance will be taken of (1) the size of the business, (2) the amount of prior advertising budgets, (3) the public patronage reasonably to be expected in the future, (4) the increased cost of the elements entering into the total of advertising expenditures, (5) the introduction of new products and added lines, and (6) buying habits necessitated by war restrictions, by priorities and by the unavailability of many of the raw materials formerly fabricated into the advertised products.

COMING EVENTS

Oct. 12 to 16—National Metal Congress and Exposition, Cleveland.
Oct. 12 to 16—American Welding Society, Cleveland.
Oct. 12 to 16—American Institute of Mining and Metallurgical Engineers, Cleveland.
Oct. 12 to 16—Wire Association, Cleveland.
Oct. 12 to 16—American Society for Metals, Cleveland.
Oct. 15 to 17—American Gear Mfrs. Association, Skytop, Pa.
Oct. 15 to 17—Federation of Sewage Works Association, New York.
Oct. 16 and 17—War Production Conference of American Society of Tool Engineers, Springfield, Mass.
Oct. 18 to 21 — American Public Works Congress, Chicago.
Oct. 20 to 22—American Railway Bridge and Building Association, Chicago.
Oct. 27 to 29—National Safety Congress Association, international convention, Chicago.
Nov. 17 to 22—National Chemical Exposition, Chicago.
Nov. 30 to Dec. 3—American Society of Mechanical Engineers, annual meeting, Hotel Astor, New York.
Nov. 30 to Dec. 4—National Exposition of Power and Mechanical Engineering, New York.


AP FLASH!
"SILVER STREAK" ABRASIVE BELTS SAVE HALF!
Metal goods manufacturer switches to "Silver Streak" belts and cuts belt changes in half... from 8500 to only 4000 changes per year!

• Eliminating 4500 belt changes – in these times – figures up to *added production* and a lot of *valuable time saved!* Money, too! Results like this are typical with "Silver Streak" abrasive cloths. AP's exclusive insulating process makes "Silver Streak" belts and discs longer-lasting, tougher – makes them *stay* sharp, and *on the job,* even when grinding temperatures go up to 1700° – long after ordinary abrasives are worn out.

No matter where you're using abrasive cloths – no matter what type of grinding or finishing job you're doing – there's an AP coated abrasive that will help you do it *better, faster,* in *less time* and at *lower cost.* We can prove it to you – send for FREE samples of the AP products you need – *and try them out!* No obligation. Abrasive Products, Inc., 535 Pearl Street, South Braintree, Massachusetts.

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JEWELOX • JEWEL EMERY • JEWEL GARNET
INC.
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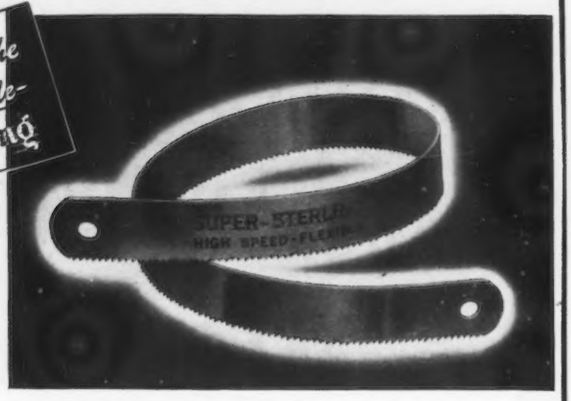
BROKEN BLADES STEAL PRECIOUS TIME!

Today...switch to the "plus service" blade— Super-Sterling



• "Time out for a new blade!" Each time you hear this complaint, more wasted minutes are added to the excessive toll of time that blade failures take . . . Cut down this waste with Super-Sterling *Flexibles*. These high speed steel blades are extra tough, hard, durable. Can't break or shatter in regular work. *Guaranteed against breakage in normal use.* Ask your mill supply house for a demonstration.

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MILLIONS IN USE • EVERYWHERE

ASTE to Hold Meeting on War Production Oct. 16, 17

• • • **Major problems** of war production—labor shortage, tool conservation, war tooling, materials substitution and inspection—will be discussed by tool engineers, heads of war industries and government officials at the two-day war production conference of the American Society of Tool Engineers at the Hotel Kimball, Springfield, Mass., Oct. 16 and 17.

Opening the program on Oct. 16 will be a session on labor training, with the following speakers: S. J. Hoexter, Science and Management War Training, Washington; Thomas O. Armstrong, Westinghouse Electric & Mfg. Co., Springfield, Mass.; and Arnold Thompson, National Steel Car Corp., Ltd., Malton, Ontario.

The afternoon session on inspection will have as speakers: Col. H. B. Hambleton, Chief of Ordnance Office, Washington; and Carleton Nelson, Colt's Patent Fire Arms Co., Hartford.

Tool conservation and tool salvage, topics of the Friday evening session, will be discussed by Arthur Merry, Pratt & Whitney Aircraft, East Hartford; and Larry W. Lang, National Tool Salvage Co., Detroit.

Saturday's conferences on war tooling have been divided into two simultaneous sessions. At one session Elmer A. Clark, Budd Wheel Co., Detroit, and the Automotive Council for War Production; and Gordon G. Swebilius, High Standard Mfg. Co., New Haven, will speak. At the second session, I. A. Hunt, Federal Products Corp., Providence; L. H. Johnson, Johnson Tool and Die Co., Dayton, Ohio; and William F. Asmus, Consolidated Aircraft Corp., San Diego, Cal., will speak.

P. S. Carswell and C. H. Whitlock, Monsanto Chemical Co., Springfield, Mass., and L. S. Bergen, Crucible Steel Co. of America, New Haven, will speak on materials substitution, Saturday afternoon.

Trade Notes . . .

Formation of The Scott-Tarbell Co., welding supply jobbers in northern Ohio, has been announced. Ray Tarbell, formerly associated with the Una Welding Co., Cleveland, and the Babcock & Wilcox Corp., and Ed Scott, president of the Cleveland S hool of Welding, are the new firm's officers. The Scott-Tarbell Co. will distribute Allis-Chalmers Co. Weld-O-Tron and Allis-Chalmers Co. alternating current welders; it will represent the Victor Equipment Co. line of welding and cutting torches; the Tweco Products Co. line of electrode holders, clamps and cable connectors; Una Welding, Inc., automatic and shielded arc line of electrodes; and give a complete service for welding needs, including protective equipment clothing, as well as a consulting engineering service. The new company is located at 2261 East 14 Street, Cleveland, Ohio.

•

Rockwell Engineering Co., 10126 South Western Avenue, Chicago, has been organized to manufacture steel products to customers' specifications. It is headed by Anthony J. Rudis, formerly sales representative of Arthur J. O'Leary & Son Co.

•

Independent Pneumatic Tool Co. has moved its Boston office to 78 Brookline Avenue, and its Birmingham office to 1411 North Third Avenue. Vance G. Turner has been appointed manager of the Boston branch.

•

Standard Tool Co., Columbus, Ohio, has changed its name, effective Oct. 1, to Standard Machinery Co. The change was made to avoid confusion with another concern of similar name.

Just Out—The Iron Age Priorities Guide No. 7

• • • Hundreds of IRON AGE readers have ordered additional copies of the new 56-page Iron Age War Priorities Guide which appeared in the Oct. 8 issue of this publication.

As long as the supply of this latest checklist of priority orders, forms and regulations used in the metal-working industry lasts, orders for extra copies will be filled.

The following table of contents shows what industry will find in this Seventh Edition of the War Priorities Guide:

	Pages
Index to Material and Equipment Orders	2
Directory of WPB Regional Offices	4
Listing of Priority Regulations	5
Description of "M" Orders	6
Effective Dates	6
Filing of Related Forms	6
Administering WPB Branch	6
How to Operate Under PRP	18-19
Elements of Steel Quota Plan	19
Description of "P" Orders	20
Effective Dates	20
Period of Time Covered	20
Filing of Related Forms	20
Administering WPB Branch	20
Ratings Assigned by "P" Orders	20
Checklist of PD Forms and Related Orders	30
When, Where Filed	30
Forms Recently Declared Obsolete	30
Description of Machine Tool "E" Orders	43
Description of "L" Orders	44

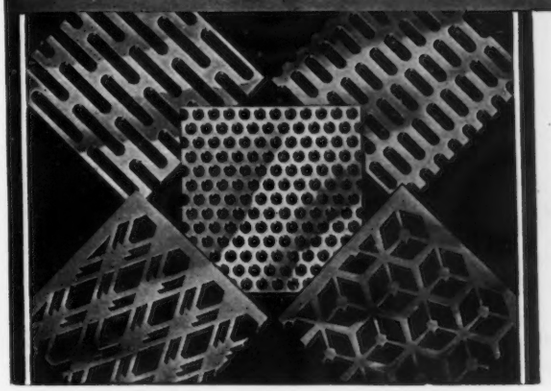
Prices for extra copies (please send coins or stamps for orders for one dollar's worth or less) are: One to ten copies, 50c. each; 11 to 100 copies, 40c. each; 101 to 300 copies, 35c. each, and 300 or more copies, 30c. each. Write, telegraph or telephone THE IRON AGE, 100 E. 42nd St., New York.

Smaller Units of Work Seen For Women War Workers

Detroit

• • • **To insure the most** efficient use of women in war plants, jobs must be tooled down to women's physical and skill levels, O. W. Winter, president of the American Society of Tool Engineers, told the Detroit Section Thursday night in its first meeting of the year. Mr. Winter said that women's physical limitations would result in use of air, hydraulic and electric control for machinery.

PERFORATED METALS



INDUSTRIAL AND ORNAMENTAL

ANY METAL

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ARE ESSENTIAL IN TIMES OF WAR AND PEACE

They are used in the manufacture of airplanes, battleships, explosives and in many important and essential industries such as the processing of grain, food products, petroleum, coal, etc. We make all sizes and shapes of holes to meet the most exacting conditions.

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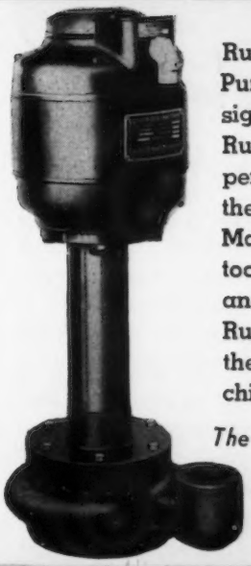
RUTHMAN



Ruthman Gusher Coolant Pumps are most efficiently designed. This is why today Ruthman pumps are so dependable and stand up under the most grueling usage. Many well known machine tool manufacturers know this and for this reason use Ruthman on their machines thereby making a good machine even better.

The RUTHMAN MACHINERY COMPANY CINCINNATI, OHIO

Coolant PUMPS

Claims War Contractors Are Greatly Over-Equipped

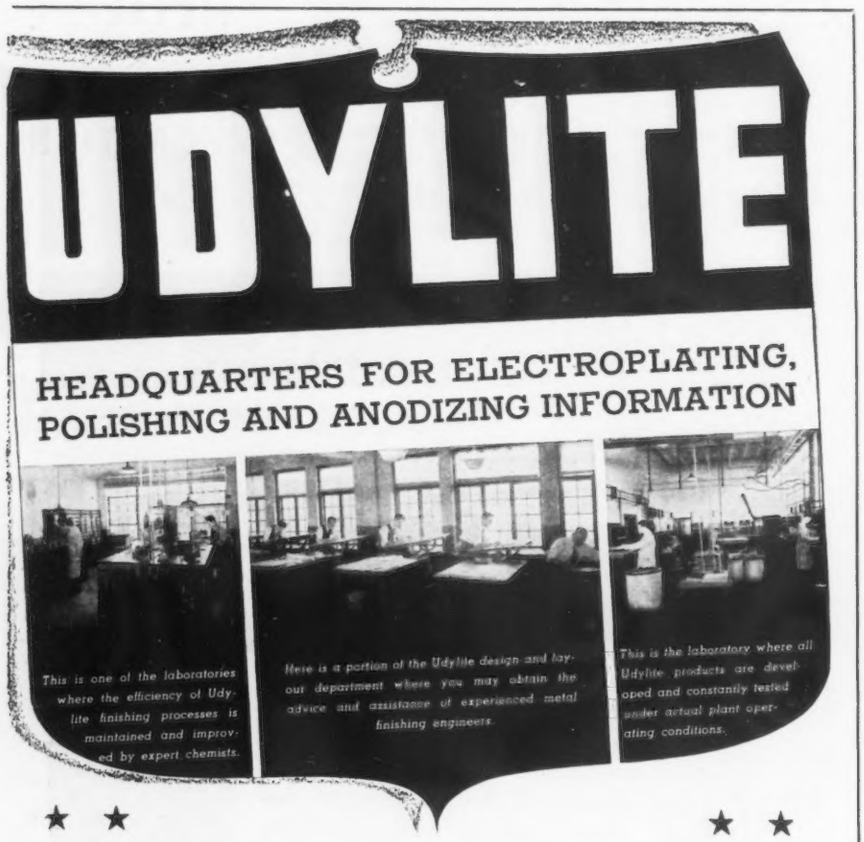
New York

• • • **Emulating his own advice** by stating that what this country needs is more constructive criticism, N. P. Lloyd, of Lloyd & Arms, Inc., Philadelphia, indicated that in the aggregate war contractors had 20 per cent more machine tool equipment than required to meet hourly production schedules, assuming that the materials for these schedules are available. Mr. Lloyd, who spoke here before the annual meeting of the Associated Machine Tool Dealers of America on Oct. 7, said that these war goods producers cannot possibly use more than 60 per cent of their productive capacity because of the material situation. This condition has been brought about through the fact that a certain percentage of each contract price has been allowed for facilities and that the various contractors have used the full amount for equipment whether they actually needed it or not.

The speaker indicated that four contractors, all working on the same product, had been reduced to one-third of their producing capacity about three months ago because of material shortages and in the future probably never would reach more than 75 per cent of capacity. He proposed that equipment be taken out of such plants and that a lot more machine tool orders be cancelled. It was his opinion that the machine tool industry could catch up with current requirements by the first of the year, and by July 1 machine tool production could be reduced to 25 per cent of the present output or about an annual rate of $300,000,000, instead of $1,200,000,000. Aside from materials, Mr. Lloyd pointed out that an even greater bottleneck today was the shortage of trained supervisors to operate all the machine tools now being manufactured.

Speaking of the problem of renegotiation under public law No. 528, the speaker advocated that members of the association await amendment of Section 403 before voluntarily agreeing to accept any renegotiated prices. Mr. Lloyd maintained that under the present law no final settlement can be made, and because of the loose wording of the law, no agreement has been reached on policy by the price committees of the Army, Navy and Maritime Commission. Besides, he said, machine tool prices are already under the control of the OPA.

The meeting was also addressed by Brig. Gen. H. F. Safford, chief, production service branch, industrial division, Office of the Chief of Ordnance, who described the suggestion and conversion unit which had been set up in the Ordnance Department to obtain and pool ideas relating to the more efficient tooling for the production of ordnance materiel. Many design changes necessitated complete revision of machine operations, but these changes are made only after samples have been very carefully tested. General Safford pointed out that it is not possible to risk lives with experimental ordnance equipment and that all the "bugs" have to be worked out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MACHINE TOOL HEAD: Dan Harrington, the newly elected president of the Machine Tool Dealers of America.

of a product before it is put into actual production.

The speaker also illustrated by a number of examples how the Ordnance Department has been making conversions to save critical materials. Centrifugal casting of gun barrels, for example, have resulted in the saving of 360 tons of nickel per month. By changing the heat treatment on another part, 520 tons of nickel is being saved per month, 100 tons of chromium and 50 tons of vanadium.

The general session was also addressed by Mason Britton, vice-president, McGraw Hill Publishing Co., who made some informal remarks.

Dan Harrington, general manager, Wilson Brown Co., New York, succeeded F. B. Scott of the Syracuse Supply Co. as president of the Association. Albert M. Stedfast, of Stedfast & Roulston, Inc., Boston, was re-elected first vice-president, and A. B. Einig, general manager, Motch & Merryweather Co., Cleveland, was elected second vice-president. George Habicht, Jr., president, Marshall & Huschart Machinery Co., Chicago, was named secretary-treasurer.

Newly elected directors are Leo H. Gorton, partner, Machine Tool & Supply Co., Tulsa, Okla.; Tracy W. Harron, president, Harron, Richard, McCone Co., San Francisco; and C. S. Bradeen, vice-president, Canadian Fairbanks, Morse Co.

200 Steel Salesmen Push Scrap Drive

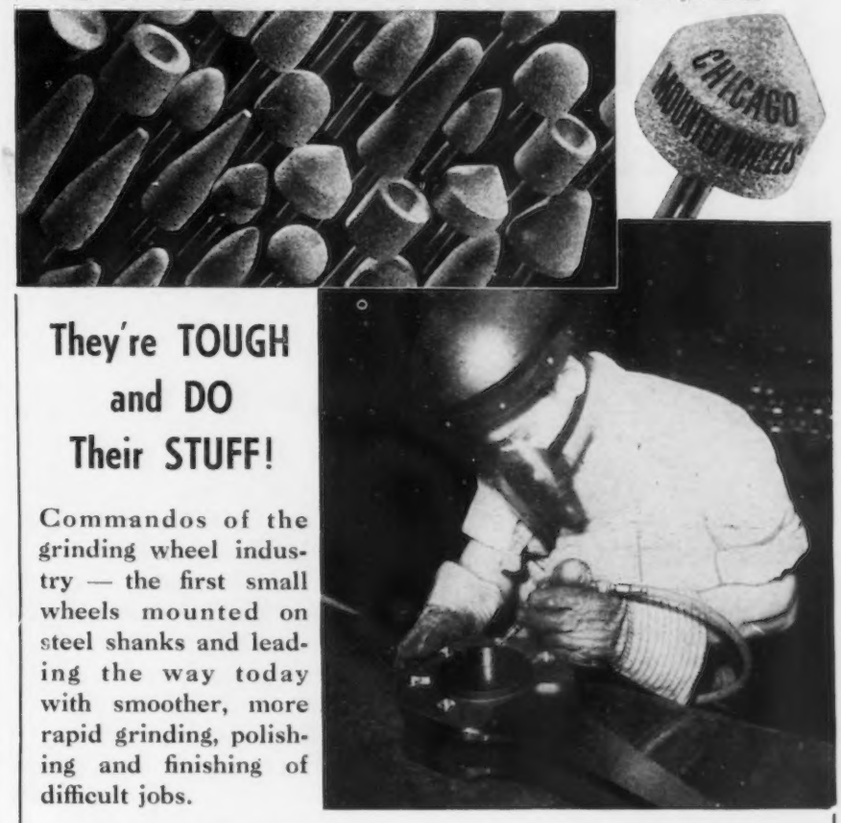
Chicago

• • • **Steel company** salesmen here are being turned into scrap salvage experts in an effort to turn out still more dormant scrap. At a meeting at the Palmer House last week, 200 district sales representatives were told that it was their job to overcome inertia. They were told that some industrial plants have fallen down on the job because they feel they have efficient salvage departments. H. T. Hill, regional chief of the salvage section of WPB, cited the case of a plant that believed that it had scrapped all unnecessary metal equipment. Yet, a second combing of the plant turned up 7000 more tons of scrap.

The meeting marked the opening of a 90 day-drive by the salesmen among steel consumers in Illinois, Iowa and parts of Indiana.

L. C. Reed, Chicago district sales manager of Inland Steel Co., was chairman of the meeting.

POLISH 'EM OFF WITH



They're TOUGH and DO Their STUFF!

Commandos of the grinding wheel industry — the first small wheels mounted on steel shanks and leading the way today with smoother, more rapid grinding, polishing and finishing of difficult jobs.

Chicago Mounted Wheels—the result of 45 years of KNOW HOW—come in a wide range of styles on different size shanks, for use with any portable or flexible shaft grinder. Several special-formula abrasives give 150% to 300% longer service. More than 200 shapes, all mounted and rarin' to go.

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TEST WHEEL FREE

If you have a grinding problem, send for a Survey blank, which you'll find easy to fill out. Upon its return, our abrasive engineers will analyze it and send you without charge the trial wheel they recommend for your particular job.

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☐ Free Wheel. Size.....

Name .....

Address .....

"Economic Stabilization" Leads Labor Scene in Interest

• • • **Economic stabilization,** words destined for prominence when the President suggested the wage-farm controls, have started right from scratch to lead the labor scene in interest. WLB started the ball rolling by reaffirming its "little steel" policy granting every industrial worker the right to expect increases equal to 15 per cent during the period from Jan. 1, 1941, up to the present . . . and from all that can be seen . . . retroactive to Feb. 15, 1942, as in the U. S. Steel decision.

It was intimated in the Oct. 8 issue of THE IRON AGE that the WLB faced declaring such a basis of wage stabilization generally, or stand the consequences of thousands of demands for such an increase. It was further stated that the wage ceiling would probably be set at whatever figure this 15 per cent increase amounted to instead of the Sept. 15 wage level referred to in the bill. That WLB is moving in this direction seems plain.

WLB also gave provisional approval to all wage increases put into effect before Oct. 3, but reserved the right to order discontinuance of further payment if held inconsistent with the policy of the OES. The Treasury department was asked by OES director James F. Byrnes to recommend regulations to put into effect the President's goal of a $25,000 limit on net salaries. To do this job, the Treasury department was chosen because salaries in excess of this amount will effect tax deductions and will be the intimate problem of that department as such.

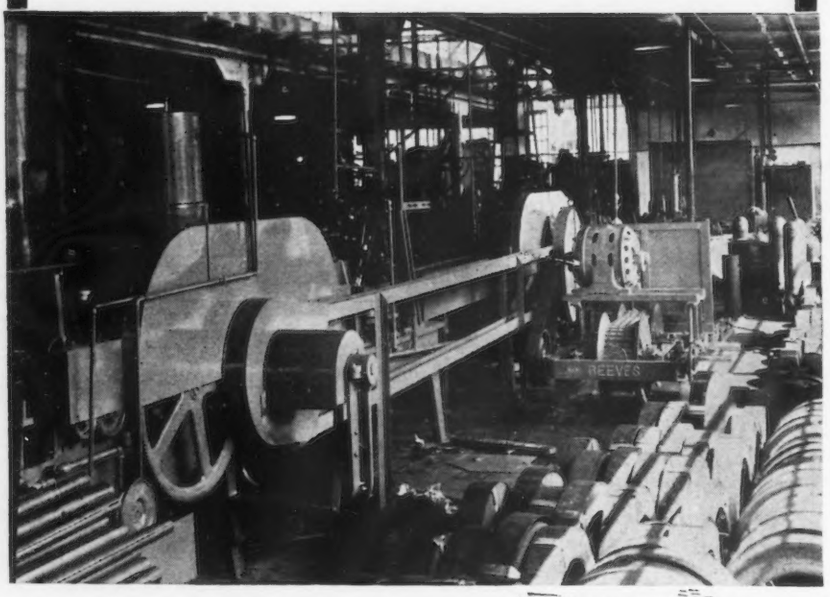
In Cincinnati this week the gathering storm which has long brewed in the hearts of United Mine Workers against the CIO (to which they are affiliated) broke with an hour long speech by John L. Lewis, their president, which precipitated a decision, by vote, to disaffiliate themselves from the CIO.

Mr. Lewis charged the CIO with vilification, unpaid and unacknowledged debt in the amount of $1,685,000, allegedly loaned to the CIO but claimed by them to have been a campaign gift, and failure to make peace with the AFL, a motion which Mr. Lewis has strongly favored. Until these terms are fulfilled it appears that the United Mine Workers will remain independent.

Perhaps they will consider affiliation with the new federation of independent unions which last week was suffering the pains of organization in Chicago. The UMW's 500,000 membership would certainly swell the ranks of this struggling new federation whose total membership promised to be only about 265,000 at present.

Much more likely, is the theme of current sentiment, which believes that the miners will seek reaffiliation with the AFL which will give the AFL a potent lever in coming

REEVES-EQUIPPED TUBING MACHINE HELPS SPEED *plane production*



"FOUR-IN-ONE" Machine Spits Out Airplane Parts Machine-Gun Style . . .

This tubing machine, driven through a REEVES Variable Speed Transmission, forms, welds, sizes and cuts to proper lengths a maximum of 90 inches of airplane tubing per minute. The REEVES drive synchronizes the four operations, and permits speeds to be accurately increased or decreased according to size and weight of material—without stopping the machine. This is typical of the way REEVES Variable Speed Control is helping speed up production of precision parts for planes, ships, tanks, guns and other vital war equipment, by giving production machines full-range speed adjustability. REEVES units are easily applied to any driven machine in service. Write for booklet IG-423, "MORE OUTPUT FOR VICTORY THROUGH VARIABLE SPEED CONTROL."

REEVES PULLEY COMPANY, COLUMBUS, INDIANA

REEVES *Accurate Variable* SPEED CONTROL

Labor Highlights

- *First Stabilization Moves*
- *UMW, under Lewis, Bolts CIO*
- *Legion May Act on Strikes*

negotiations with the CIO for a merger of the two organizations.

Last week Admiral Ben Moreel of the Bureau of Yards and Docks pulled no punches about the Navy's attitude when he told labor publicly that, we could damn well get along without unions. This week another voluble blast against strikes comes from Roane Waring, newly elected national commander of the American Legion. Speaking in Memphis during his triumphant homecoming after his election, Mr. Waring made it clear that the Legion was fed up with the increase in strikes here which was occurring in spite of the unions solemn pledge not to strike. He also intimated that at least a part of the blame arose from the government's labor-coddling policy, which if indications are right, the powerful Legion lobby may try to change by demanding legislation that will effectively check strikes and control labor.

That both Admiral Moreel and Roane Waring had reason to be stirred over the strike situation is plainly recorded in the recent tabulation of strikes issued by the WLB. These figures show a constant, month-by-month increase in strikes from January's 27 to the amazing count of 229 for the month of August—this is in war industries only. Man-days lost rose from 46,197 in January to 266,353 in August and total man-days lost for the year to date are 1,396,760.

•

Labor Board Grants Women Equal Pay for Equal Work

Washington

• • • **WLB in a decision** handed down recently to Brown and Sharpe Mfg. Co., Providence, granted women workers "equal pay for equal work," thereby setting a policy for future decisions.

Brown and Sharpe was ordered to include in its agreement with AFL's International Association of Machinists, a clause "which adopts the principle of 'equal pay for equal work' for female employees who, in comparable jobs, produce work of the same quantity as that performed by men."

Dr. George W. Taylor, vice-chairman of the WLB, in clarifying the Board's stand said in part, "Female employees assigned to the same operation which has been or which is performed by men should receive the same pay when they produce the same quantity and quality of output." It was also made clear that no slight or inconsequential changes in job content or method of operation would be considered as a reason for setting up a wage differential against women.

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LOW COST

The planetary produces this work at rate of 60 pieces per hour. BOTH THREADS SIMULTANEOUSLY.

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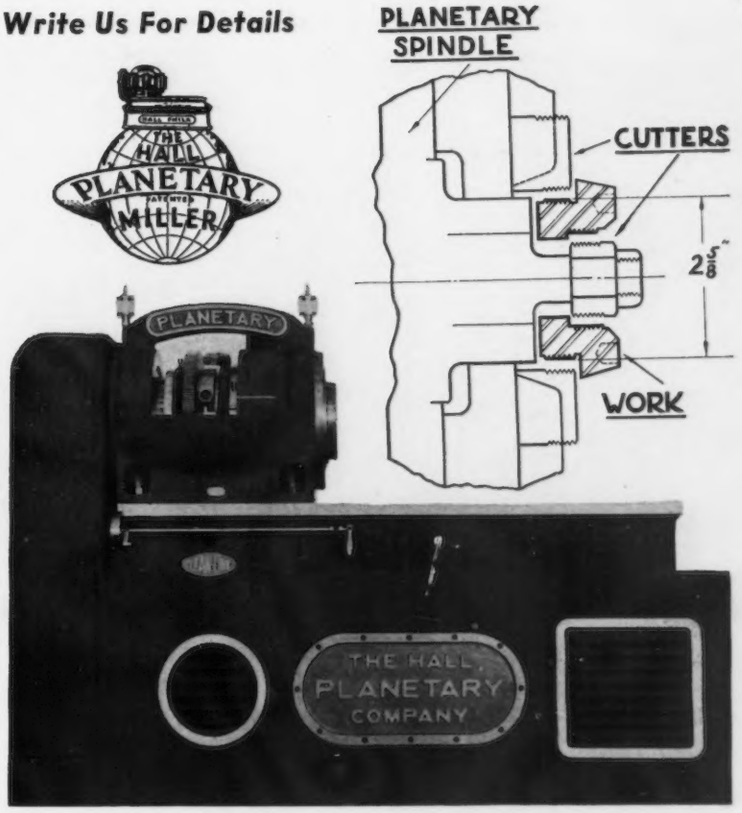

HALL PLANETARY CO.

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USWA Wins Elections at Crucible Steel Co. of America

Pittsburgh

• • • **National Labor Relations** Board elections held last week at plants of the Crucible Steel Co. of America and its subsidiary, National Drawn Steel Co., resulted in the CIO United Steel Workers winning by a vote of 15,553 to 703. Although the USW has a contract at all Crucible plants, it petitioned the system-wide ballot when a question arose as to whether it still maintained a majority.

Plants of the Crucible Co. are located in Pittsburgh, Midland, Jersey City and Harrison, N. J., Syracuse, N. Y., and East Liverpool.

The board also ordered elections, to be held within the next 30 days, among employees of four plants of Harbison-Walker Refractories at which district 50 of the United Mine Workers and the CIO United Clay Workers are contesting for representation rights. The plants are located at Clearfield, Pa., Powelton, Pa., Wallaceton, Pa., and Barrett, Pa.

•

UMW Will Demand Pay Increase in April

Cincinnati

• • • **John L. Lewis,** president of the United Mine Workers of America (now ex-CIO) made clear in his statement on the eve of the UMW convention here that they would ask wage increases for the 500,000 member miners commensurate with the increase in living costs since 1941.

He said that the wage question would undoubtedly be one of major importance at the convention, although since then the UMW's disaffiliation from CIO has seemed to rob the spotlight.

Wage demands are expected to open at the expiration of current agreements in April and will probably request a basic rate increase of $2 a day over the present $7 basis for a five-day, 35-hr. week. However, the recent admission by the WLB that all industrial workers are entitled to the equivalent of a 15 per cent increase from the January, 1941, basis, may nip this brewing trouble in the bud by automatically allowing an increase on that basis without discussion.

•

CIO Takes Disciplinary Action against Member

Cleveland

• • • **For leading a wildcat** strike last week against Ferro Machine & Foundry Co., engaged in war production, Dave Balint, president of Local 1666 of the USWA, this week faced expulsion from the CIO affiliated union and loss of his job. Joseph Kanecki, international organizer of the union, charged Balint with three union violations and asked that he be expelled from the organization.

This action is the first of a disciplinary nature to be initiated here against a member since the war began. It came as the activities of Dave Balint and his brother, Alex, regional director of the Mine, Mill, and Smelter Workers (CIO), were being investigated by the District Attorney's office. The MM&SW union, with which Alex Balint is associated has staged innumberable slowdowns, work stoppages, and wildcat strikes at the Cleveland plant of the Aluminum Co. of America.

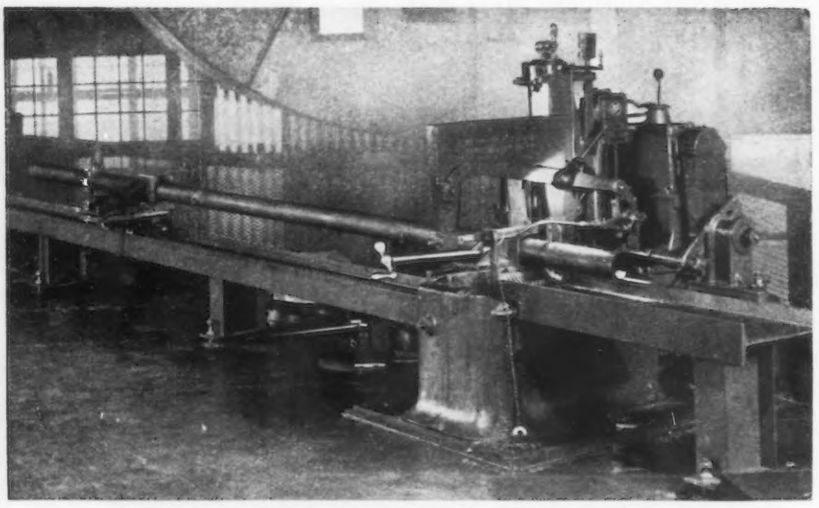
•

Wage Disputes Stop 7800 Anthracite Miners

Wilkes-Barre, Pa.

• • • **Following,** by less than 24 hr., a government-staged demonstration to increase anthracite production, 1300 miners at the No. 6 mine of the Susquehanna Collieries Co. at Glenlyon refused to go to their posts Oct. 1 over a wage dispute. The strikers are said to have charged that the company cut rates but this was denied by a company spokesman.

On Oct. 7, a strike of 6500 miners stopped operations in the Panther Valley anthracite fields which produce about 4,000,000 tons a year. The strike, which was the result of a wage dispute, started by a walkout of 1500 miners at an Edison Coal Co. colliery and was soon joined by 5000 workers of the Lehigh Coal and Navigation Co.,



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Chicago, U.S.A.

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225 Lafayette St., New York

Auto Industry 95.1% On Direct War Work

Washington

• • • Direct war work absorbed 95.1 per cent of the automotive industry's manufacturing effort during July, figures released by the Automotive Branch of WPB have revealed. These figures, representing a 3.5 per cent increase and a 14.8 per cent increase over May, are derived from employment data covering 396 plants owned by 133 companies. In July this group had 605,264 wage earners which put in 119,160,000 man hours on war work.

In August, preliminary figures showed the man power total had gained to 641,575.

Total shipments during July came to $540,979,000, as compared with $494,113,000 in June and $427,598,000 in May. Shipments from prime contractors only amounted to $332,307,000 in July. The backlog at the end of July amounted to more than $10,000,000,000, WPB said.

according to reports. Federal and State conciliators are said to be attempting to effect a settlement.

•

AFL-CIO Will Advise Smaller War Plants Div.

Washington

• • • Making certain of labor's representation in WPB's Smaller War Plants Division, deputy chairman Lou E. Holland appointed two labor union representatives last week as advisors to the Division. The appointee's were Matthew Woll, AFL vice-president and Philip J. Clowes, former USW-CIO official and more recently CIO's associate director of the WPB Labor-Production Division. Both men quickly accepted the appointment.

Mr. Holland said in discussing the appointments, "I am sure that the counsel of these distinguished labor men will be of greatest value in our efforts."

•

Court Purchase Order

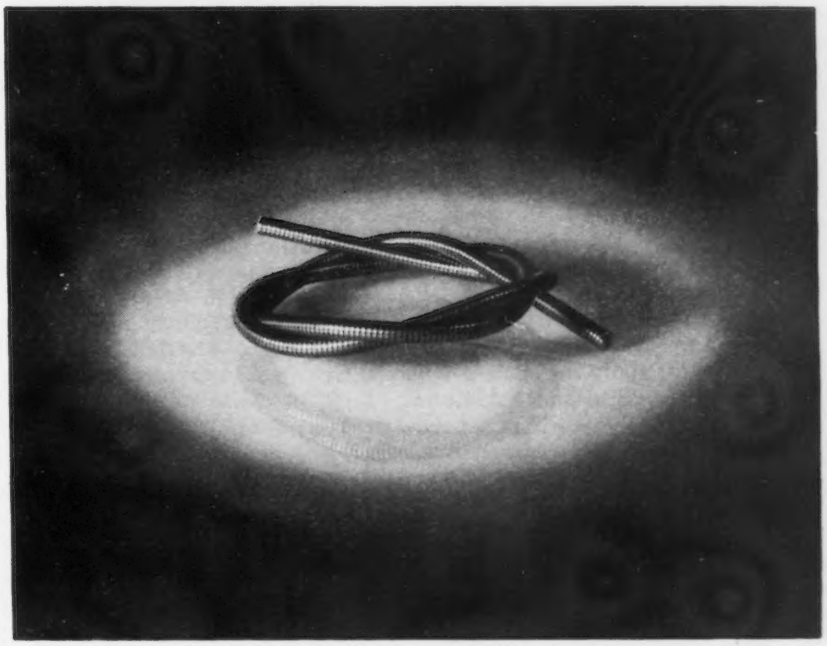
• • • The Missouri Pacific Railway was authorized by the Federal Court at St. Louis to purchase 10,000 tons of 112-lb. rails to cost $430,000 and other track material costing $233,375, amounting to a total of $663,375.

AFL-WLB Tangle At Western Cartridge

East Alton, Ill.

• • • Charging that the American Federation of Labor has "flouted the orderly procedure of the War Labor Board" in calling a strike at the Western Cartridge Co. plant here, the company revealed that the strikers had forced a complete shut-down of production on vital war material. The strike was called Saturday in an effort to bring about recognition of the AFL union as exclusive bargaining agent, before WLB could decide the matter, company spokesmen said.

Union spokesmen said the strike was unauthorized and that the men were asked to go back to work. The union also charged that the company had failed to comply with WLB orders. The plant was previously shut down by a strike in September and the case given to WLB.



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THE TORRINGTON
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Die Casters Get Price Setup

• • • **Ways of** determining prices of die castings of designs or metallic composition not sold in March, 1942—base pricing month of the General Maximum Price Regulation—were given by OPA on Oct. 6.

Sales of die castings are subject to the General Maximum Price Regulation except as they have been exempted from it by Supplementary Regulation No. 4, which applies to sales to United States agencies. Under the General Regulation a die caster who cannot determine his maximum price on the basis of the highest price he or his closest competitor charged during March, 1942, must apply to OPA for authorization to determine his maximum price.

Order No. 84, issued under section 3 (b) of the General Regulation and effective Oct. 6, provides that instead of applying to OPA for a ceiling, a die caster unable to set a maximum price under Section 2 shall apply the same pricing formula or method of calculating prices which he would have used on March 31, 1942. In applying the pricing formula he is to use material costs, manufacturing costs, allowance for plant and administrative overhead, and the margin of profit used March 31, 1942.

Within 10 days after determining his price he must file it with the OPA, including a break-down showing material costs, manufacturing costs, plant overhead, administrative overhead, and margin of profit.

•

Aluminum Scrap Amendment

• • • **If borings,** turnings and similar machinings of aluminum scrap contain oil, water or other forms of contamination, maximum prices may be paid only on the basis of the actual weight of aluminum or aluminum alloy contained.

Amendment No. 1 to Revised Price Schedule No. 2, as amended, (Aluminum Scrap and Secondary Aluminum Ingot), became effective Oct. 13, and clarifies the provision in the schedule on this point and makes the schedule in this regard conform with industry practice.

No payment may be made for oil and other foreign matter contained in a shipment of scrap. The weight of oil, moisture and other contamination may be deducted from the total weight of material, and maximum prices may be paid per pound for the remainder, constituting the actual aluminum or aluminum alloy content.

•

Prices of New Goods Set

• • • **Action to prevent** delays in procurement of many newly developed manufactured consumers' durable goods and building materials by the United States armed forces and by governments of friendly nations was taken Oct. 6 by OPA.

This action was taken in Amendment No. 1 to Maximum Price Regulation No. 188, which controls the prices of new goods developed in over 100 industries. Under the new provision the manufacturer may make bids on government orders immediately after his new product has been produced. He may enter a contract to sell, may make delivery and may collect his payment for the sale. But within 10 days after entering such a contract he must file his report with OPA. After another 15 days, if no word to the contrary has been received from OPA or if OPA has given its approval, the reported price becomes official. If, on the other hand, OPA rejects the reported price the manufacturer must refund any overcharge to the procurement agency.

•

Changes Made in Schedule 136

• • • **Sale of a Machine** or part under a rental contract entered into before July 22, 1942, which provided for the transfer of title to the lessee when rental payments over and above a monthly carrying charge equalled the value of the machine at the time the contract was entered into have been excluded from price control.

The exclusion was made through Amendment No. 27 to Maximum Regulation No. 136, as amended (Machines and Parts and Machinery Services), and is retroactive to July 22. The rentals paid still remain subject to Price Regulation

EFFICIENCY PLUS: On the table of a Pontiac Division employee is graphic evidence of typical savings made possible by GM re-engineering of arms products. The finished part, weighing 6 lb., was formerly machined from a 56 lb. solid steel forging, leaving the 50 lb. of scrap turnings piled at left. This forging was replaced by a 14 lb. piece of steel tubing welded to a forged base. Now only 8 lb. of scrap need be machined off to produce the finished part, as shown at right.

No. 134 or to Price Regulation No. 136, as amended.

Wholesale sales of machines and parts at retail stores are subject to the provisions of Price Regulation No. 136 OPA announced Oct. 5.

Because there has been some misunderstanding whether these sales were covered by Price Regulation No. 136 or the General Maximum Price Regulation, OPA has issued Amendment No. 25 to Price Regulation No. 136, clarifying this point. The amendment becomes effective Oct. 9, 1942.

•

Acetone, Alcohol Revisions

• • • **Revision of** the maximum prices for fermentation acetone, normal fermentation butyl alcohol, and normal fermentation butyl acetate, to reflect recent changes in market conditions for these basic chemicals, was ordered Oct. 3. The revision, contained in Amendment No. 2 to Maximum Price Regulation No. 36 (Acetone) and Amendment No. 2 to Maximum Price Regulation No. 37 (Butyl Alcohol) established ceiling prices of 14.25c. per pound for normal fermentation butyl alcohol and 7c. per pound for fermentation acetone, delivered in tank cars in eastern territory. In addition, the maximum price for normal fermentation butyl acetate is fixed at 14.75c. per pound. The amendments are effective Oct. 3.

•

Manganese Casting Prices

• • • **Prices of** manganese steel castings and manganese steel casting products are now based on Oct. 1 to 15, 1941, levels. Previously, the General Maximum Price Regulation on April 28 established March levels for the industry.

Under Maximum Price Regulation 235, issued Oct. 10, maximum prices are divided into three categories:

(1) The published price lists in effect for a seller and distributed to one or more of such sellers' customers between Oct. 1 and 15, 1941, are the maximum prices for the seller.

(2) For castings or products other than those in the first category, specific maximum prices which were in use in general throughout the industry during the Oct. 1 to 15, 1941, period are listed as the maximum prices, and

(3) For castings or other products not falling within the above classifications, maximum prices are those based on Oct. 1 to Oct. 15, 1941, cost factors and profit margins, which are submitted to and approved by OPA. Provision is also made for the establishing of maximum prices on particular classifications of castings so as to avoid the necessity of repeated filing on the same designs.

The regulation provides freight equalization for producers with whatever foundry is situated most favorably freightwise to the point of destination. Adequate facilities to produce the order in question must be considered.

The castings for which maximum prices are set are alloys of iron, manganese (10-16 per cent) and carbon, maximum 1.40 per cent. The dollar volume of manganese casting sales in 1941 was about $20,000,000, OPA said, and over 90 per cent of this amount was produced by five firms.

•

Action on Solder

• • • **Sellers of** tin base, lead base, or tin-lead base solders containing silver were authorized Oct. 12 to add 9.634 cents per fine troy ounce of silver content to maximum prices established by the General Maximum Price Regulation for these solders.

•

Aluminum Dross Price

• • • **A maximum** price of 1.2c. per lb. for aluminum drosses, skimmings, grindings, sweepings, savings and spatters containing less than 15 per cent by weight of metallic aluminum was established Oct. 12 by OPA in amendment 2 to Revised Price Schedule No. 2, effective Oct. 16.

•

Silicomanganese Boost

• • • **Increases of** $7 a gross ton in maximum prices for all grades of silicomanganese were authorized.

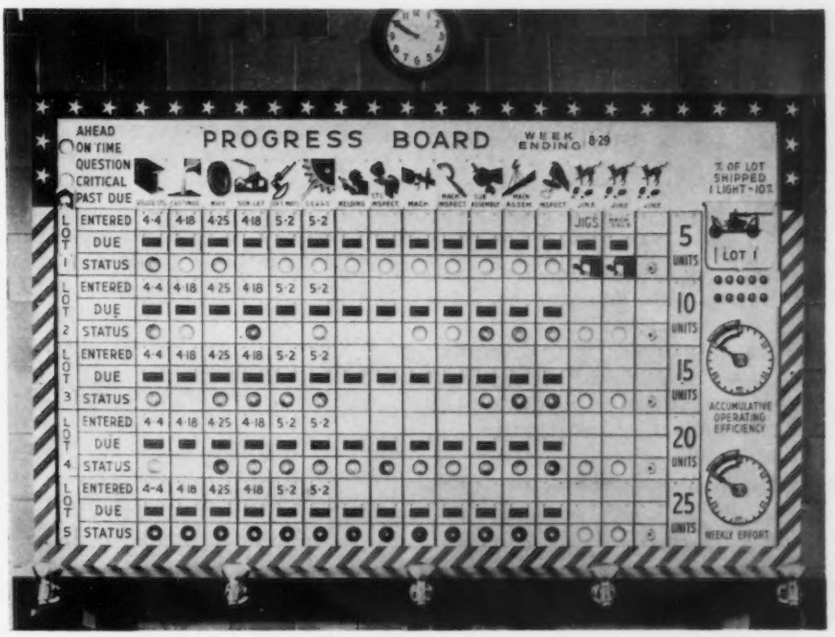
For 1½ per cent carbon silicomanganese, upon which production currently is being concentrated, the new price is $135 per gross ton, compared with $128 previously.

The higher price is provided in Amendment No. 33 to Supplementary Regulation No. 14 under the General Maximum Price Regulation. It becomes effective Oct. 3, 1942.

Sept. Steel Shipments Highest for That Month

• • • Finished steel shipments by U. S. Steel Corp. subsidiaries in September totaled 1,703,570 net tons, compared with 1,788,650 tons in August and with 1,664,227 tons in September, 1941. For the first nine months shipments were 15,761,476 tons against 15,137,436 tons in the like period last year.

PRODUCTION SCOREBOARD: Link-Belt Co., Chicago, makes no mistake about what their subcontractors are doing by scheduling each of them on this 10 ft. scoreboard hanging in their planning department. Daily contact with most of their subcontractors is recorded on the board by means of colored lights. For instance, blue means "on time"; yellow, "questionable"; red, "critical"; and a little dog-house hangs there for those who deserve it.


PROGRESS BOARD
WEEK ENDING 8-29
AHEAD
ON TIME
QUESTION
CRITICAL
PAST DUE
LOT 1 ENTERED 4-4 4-18 4-25 4-18 5-2 5-2 JIGS 5 UNITS
LOT 1 DUE
LOT 1 STATUS
LOT 2 ENTERED 4-4 4-18 4-25 4-18 5-2 5-2 10 UNITS
LOT 2 DUE
LOT 2 STATUS
LOT 3 ENTERED 4-4 4-18 4-25 4-18 5-2 5-2 15 UNITS
LOT 3 DUE
LOT 3 STATUS
LOT 4 ENTERED 4-4 4-18 4-25 4-18 5-2 5-2 20 UNITS
LOT 4 DUE
LOT 4 STATUS
LOT 5 ENTERED 4-4 4-18 4-25 4-18 5-2 5-2 25 UNITS
LOT 5 DUE
LOT 5 STATUS
% OF LOT SHIPPED
1 LIGHT = 10%
LOT 1
ACCUMULATIVE OPERATING EFFICIENCY
WEEKLY EFFORT

New Classification List Step Toward Production Scheduling

Washington

• • • **Manufacturers** have been asked by WPB to return by Oct. 25 completed PRP first quarter 1943 application forms, mailed out last week, so that it will be possible to analyze and process them in time to return the completed certificates prior to the beginning of the first quarter. In a letter accompanying the PRP (PD-25A) application forms, Ernest Kanzler, Director General for Operations, pointed out that WPB is continuing its effort to provide for production schedules more closely adjusted to the supply of critical materials and to authorize the materials on an agreed-upon time schedule.

Instructions for filling out the new forms are contained in a separate bound booklet. An innovation in this booklet is a Fabricated Classification List which divides the more important items into approximately 400 groups. This additional information was asked preparatory to putting into effect the new material distribution method which involves production scheduling.

The Fabricated Product Classification listing, expected to assist both applicants and WPB in processing applications, provides standard terminology for designation of the products which must be entered under Section B of PD-25A. Applicants are requested to use the terminology of the list wherever it is applicable, and are warned not to combine products which fall into more than one of the listed classes. Shipments and requirements for a line which falls into two or more classes must be divided. Also, WPB cautioned, an applicant should be careful not to use the terminology of the classification list unless it is literally true of a given product. When this is not the case, the applicant's own definition should be written in.

The information requested in Section B now includes, in addition to reports of shipments during the second preceding quarter, and estimated shipments for the quarter January to March, 1943, a report of rated orders actually on hand for shipment during that quarter. This will provide PRP analysts with a basis with which to compare the applicant's estimates of his needs during the first three months of 1943.

Section C calls for an analysis of all shipments by purchasers' symbols. The shipments to be identified are those for the Army (except aircraft), Navy (except aircraft), Lend-Lease and other foreign purchasers, and total aircraft. A new Section D calls for a report of the total dollar value of all unfilled rated orders, as of the most recent available date, whether or not these orders are scheduled for shipment during the January-March quarter. The volume indicated in this section will be considered in determining the number of advance quarters to be authorized under Section H.

Section E, in which must be reported use of all materials shown on Materials List No. 1, contains a new column (5) in which the applicant is to list obsolete material, or sizes, shapes, etc., which he can no longer use in his plant. This column is headed "Nonusable," under the statement of inventory on Sept. 30. Section F, which calls for reports on materials other than those on Materials List No. 1, now contains a list, Fabricated Items List No. 2, naming 17 specific assemblies and sub-assemblies. Any class of product included in this list, which the applicant uses either in production or for maintenance, repair and operating supplies, should be reported on the appropriate list, using dollars as units of measure. The inclusion in Section F of products used for repair, maintenance and operation supplies, in addition to those listed for these purposes in Section E, removes from Section G a report of these materials.

Section G is now what was Section E part 2 of the 1942 fourth quarter application. It provides a means for showing separately the requirements of materials for production of each class of product listed in Section B. It is to be completed by those companies that produce different classes of products but are unable, owing to the nature of their inventory records, to file separate forms for each.

Mr. Kanzler also issued a statement with respect to operations under PRP for the 1942 fourth quarter, pointing out that the WPB Requirements Committee found it necessary to cut back the amounts requested by direct war contractors to some extent and to cut some non-military requests considerably. He said that the armed services had been requested immediately to analyze fourth quarter production schedules in order to obtain the greatest possible continuity of production out of the materials which will be made available under PRP authorizations.

Mr. Kanzler explained that if parts manufacturers find that they will be unable to make the quantity of finished parts they had expected to make, they should immediately contact their customers so that arrangements can be made to maintain the highest possible balanced end-product production.

"It has not been found possible to cut materials authorizations to companies making the finished products in which the parts will be used," said Mr. Kanzler. "It is therefore of vital importance to the war program that all companies affected should promptly make their own adjustments so that scarce materials will not be put into process during the fourth quarter to make parts or subassemblies which are not immediately needed for end-products."

•

Machine Tool Firms Get Most of Needs under PRP

• • • **The machine tool** industry has been well taken care of for its fourth quarter requirements under the Production Requirements Plan compared with many other industries, reported George Brainard, Tools Section of WPB, in an address before the recent New York meeting of the National Machine Tool Builders' Association.

"The machine tool manufacturers, who are classifled under code number 541 for simplification in processing, have been assigned the following percentages of their fourth quarter requirements before inventory adjustments have been made: Carbon steel, 90-95 per cent; alloy steel, 85-90 per cent; stainless steel, 75 per cent; and

copper, copper base alloy and zinc, 85-90 per cent," he said.

"At the present moment," he continued, "we have been advised that the materials which have been set aside for each industry uses up the total available production, and that there will be a very small and limited pool remaining, plus the materials we will obtain from inventory adjustments. Therefore, it appears to us at the moment that the materials which you will be authorized to purchase during the fourth quarter will be all that is available to you, and that it will not benefit you to file applications for additional quantities. Please understand that this is the interpretation at this time. Machine tool producers have been assigned a flat rating of AA-2X for all the materials which they must purchase for their production."

For information about Priority Orders and Forms, see the latest IRON AGE *War Priorities Guide in the Oct. 8 issue, page 103. For extra copies of this new 56-page booklet on priority controls, write, telephone, or wire* THE IRON AGE, *100 East 42nd Street, New York.*

Mr. Brainard cautioned the machine tool producers not to take liberties with certain priorities procedures. He continued:

"Because you are permitted 85-90 per cent of your alloy steel, and 90-95 per cent of your carbon steel for fourth quarter does not by any means indicate that your production should decline in fourth quarter or even in the first quarter of next year, although it may mean in specific instances that there will be failure to complete certain individual items. You should continue to contact the Materials Section of the Tools Division for relief in specific cases."

The speaker reported August machine tool production as totaling $137,000,000, and annual rate of $1,650,000,000, short of the goal the industry set for itself but still a very substantial showing. Plant expansions since last December amounted to $77,000,000 with an expected increase in production of $300,000,000. Unfilled orders at present, he said, amount to about eight months' production at the present rate of output.

•

Action on Hacksaw Blades

Washington

• • • **The sale of** low-alloy steel hacksaw blades which are used in ordinary hand frames is permitted in Amendment No. 1 to Order E-7, issued last week by WPB. Hacksaws containing no alloying elements other than specified percentages of molybdenum and tungsten may be purchased, sold and delivered without preference rating. The limit on tungsten is 1.25 per cent and the limit on molybdenum is 0.75 per cent. The blades can not be more than 0.025-in thick or more than 12-in. long.

•

Utensils Still Limited

Washington

• • • **Existing limitations** on the use of iron and steel in certain kitchen and household utensils have been extended for the month of October by WPB. Order L-30, as amended, provides that the 70 per cent limitation on use of iron and steel in Group 1 products and the 50 per cent limitation for Group 2 products continue in effect. The action was taken pending issuance of permanent supplementary orders.

•

Power Transmission Order

Washington

• • • **WPB estimates** that its Order No. L-193, issued last Friday to cover conveying machinery and mechanical power transmission will save approximately 25,000 tons of steel in the fourth quarter of 1942. The order does the following things:

1. Sets up machinery for scheduling production and makes mandatory the filing of monthly schedules with WPB.

2. Conserves engineering man hours by prohibiting engineering services, except with respect to authorized orders where the individual order amounts to more than $5,000. Orders under this amount are subject only to materials restrictions.

3. Conserves critical material by imposing restrictions upon all orders, with certain exceptions.

•

Petroleum Coke Restricted

• • • **Delivery and use** of petroleum coke were today restricted by Conservation Order M-212, issued Oct. 10. It provides that no person shall use, deliver or accept delivery of petroleum coke except where it is to be incorporated into any of the 30-odd products specifically listed in the order, including graphite and carbon electrodes, anodes for aluminum, magnesium and alloy steel manufacture. These permitted products are mostly electrical parts, silicon carbide abrasives, welding equipment and a few other classifications, or in the treating of metals where the coke is a reducing agent for treating metallic oxides when WPB makes specific authorization for this purpose. The restrictions of the order do not apply to persons owning 100 tons or less, exclusive of briquets nor do the restrictions apply to coke manufactured into briquets for fuel purposes through today.

•

• • • **The director general** for operations on Oct. 10 restored the provision of Order M-41 which permits users of carbon tetrachloride for purposes assigned a B-2 rating to consume 100 per cent of the amount used in the base period. The 100 per cent provision was in effect from Aug. 1 to Sept. 30 and then lapsed. It now is restored until Dec. 31.

•

Vehicle Makers Aided

• • • **To assist** makers of off-the-highway motor vehicles in making up their production schedules, the director general for operations has authorized producers to treat orders for such vehicles as though the orders for them bore AA-2X ratings. The authorization was granted in Amendment No. 2 to Limitation Order L-1-e.

•

New Specifications Issued For Concrete Buildings

Washington

• • • **WPB on Oct 5** established national emergency specifications for the design of reinforced concrete buildings which are constructed, financed or approved by governmental agencies on contracts placed after Dec. 4. In WPB Directive No. 9, signed by Chairman Donald M. Nelson, it is ordered that a manual of specifications apply to and govern the use of reinforcing steel for all such buildings.

It is estimated that the use of these specifications will result in a saving of about 25 per cent of the amount of reinforcing steel entering into building construction. Annual savings are expected to be between 150,000 and 250,000

net tons. The savings to be accomplished by the directive will result from the use of larger structural members and higher unit tensile stresses in reinforcing steel than normally are used in the design of reinforced concrete buildings. Safety factors have been closely studied. Further economy in the use of reinforcing steel is obtained by increasing the allowable unit tensile stress from 18,000 lb. per sq. in. to 20,000 lb. per sq. in. for structural grade bars and from 20,000 lb. per sq. in to 24,000 lb. per sq. in. for intermediate and hard grade bars.

Although the effective date is Dec. 4, the war agencies are empowered to put the directive into immediate effect wherever possible.

Agencies undertaking or approving wartime construction are directed to obtain from the person in charge of the design of each building a certificate to the effect that he has complied with the emergency specifications. In cases where forms PD-200 and PD-200A must be filed with WPB to obtain authorization to begin construction, this certificate should be filed with the forms.

•

Gold Mines Halted

• • • **An order** requiring gold mines to cease operations at the earliest possible date, and at the latest to stop breaking out new ore within seven days, was issued Oct. 8 to make manpower available for other mining operations.

The order (L-208) covers all mines in which gold is produced except those to which serial numbers have been assigned under Preference Rating Order P-56 because they produce substantial amounts of other scarce metals needed for war uses. Certain small mines are excepted. In addition to the prohibition against breaking out new ore after Oct. 15, the order provides that all operations at the mines affected must stop within 60 days, except the minimum necessary to keep buildings, machinery and equipment in repair, and workings in safe condition.

The small mines exempt from the provisions of the order are lode mines which produced less than 1200 tons of commercial ore in 1941, and placer mines which treated less than 1000 cubic yards.

Priority Rating AAA-AAAAAAAAAA-X

• • • **Views of a** midwest steel man on septuplicate forms, vacations, the Census Bureau, PRP and other difficulties in doing business in wartime are contained in the following letter sent recently to a War Production Board member:

"Sir: We see by the papers that WPB has ordered that no orders with rating lower than A-1C be taken into account when allocating, selling, or buying copper scrap, ingot, etc. Under Order P-68, several A-1-C ratings are still being issued, although that rating has been too low for effective service for some time, as you know. (We have noted the very splendid cooperation you have given our customers in getting high enough ratings on their orders. We just advised ARNCO that you get results and you will probably be hearing from them soon.)

"As a steel man, you know it is impossible to forecast the vagaries of a blast furnace. A furnace that goes for months wearing tuyeres out, not burning or cutting them, may suddenly shoot 200 or 300—nobody can foretell when this may happen and be protected against it—and these simple facts make ridiculous the entire PRP plan of basing amounts on earlier periods. (Our 3rd quarter PRP gives us A-1-C rating to turn out AAA and AA3 and AA4 orders, to say nothing of directives.)

"In the past, you have been a tower of strength when it became necessary to go to bat for Iron & Steel Industry, and I'm hoping you can get ALL their ratings raised above that ridiculous A-1-C. The way things are, if we show 35 per cent A-1-C in our unfilled orders, we may have our copper allocation cut by 35 per cent, whereas, as a matter of fact, we have not cast any A-1-C for goodness knows how long and before we start these orders they must be raised. In the meantime, if we are forced to curtail and lay off more mechanics—well, figure it out yourself. (The biggest small mistake the WPB made—small, because we are little fellows—was to make us lay off mechanics in May and cut our operation about one-third, because everything we make goes into blast furnaces.)

"For the life of me, in view of all the squealing and yammering about steel shortages and the need for steel, steel, steel, and in the name of the Father, Son and Holy Ghost, I don't see why they don't raise the whole steel industry and leave us alone. Apparently the idea is that we are going to hoard rubber hose, or tin, or God knows what, when all we are trying to do is satisfy the OPA, satisfy the WPB, satisfy the Census Bureau, satisfy anyone else who can think up a questionnaire, fill out forms in sextuplicate and septuplicate, ad infinitum, and in our spare time, provided we are not fighting some snooper for our life, we *hope* to keep the steel mills running. But, of course, that is a minor point—the heck with the steel mills.

"One day three men came in from OPA and put micrometers on my scrap wire and took up 3 hr. doing what I could do in 15 min., and I'm no ball of fire. It so happens that the Copper Branch had been giving me hell for not getting more scrap, as if I were perverse enough not to be able to figure that a saving of 1⅛c. per lb. on 1,000,000 lb. of copper is $11,250. After goggling around and looking wise and mumbling to themselves and asking me to sign a lot of junk I told them I dared not sign, because my lawyer would fire me if I did, they finally owned up and said the scrap was O.K. Next day I got results on an analysis of a sample from a gate of a tuyere (the worst place to take a sample) run with that same scrap and it was 99.66½—and phosphorus and you have so close to 100 per cent purity that it isn't even funny. I suppose I'm crazy, but I still don't see why they had to take 3 hr. to tell me that copper was O.K. when I knew it in the first place.

"Please don't tell the OPA Gestapo on me. The way things are going, a man doesn't dare open his yap—and what else are we fighting this war for? Or are we fighting it—without steel? I did tell these gents that I hoped all this was wearing the pants off Hitler, but I doubted it. Maybe I antagonized them. I would not do that for the world.

"Every day or so an 'expediter' comes bouncing in and tells me his job has been pushed ahead two months, and I suppose I'm sup-

This Week's Priorities and Prices

Storage Battery ceilings have been postponed from Oct. 1 to 15 by Amendment No. 28 to Maximum Price Regulation 136 as amended, effective Oct. 1. (OPA-888)

Iron and steel producers will be permitted to use higher ratings for repair and maintenance supplies under order P-68 as amended Oct. 3. (T-951)

Die castings producers are given speedy procedure for determining prices of castings of designs or metallic composition not sold in March, in order 84 under section 3 (b) of the General Maximum Price Regulation, effective Oct. 6. (OPA-869)

WPB's steel recovery program was started by the Steel Recovery Corp. with the mailing of the first of 200,000 inventory certification forms to known and presumed holders of steel stocks rendered idle or excessive as the result of WPB orders and regulations. (T-970)

Hand service tool sales and deliveries are limited to purchase orders rated A-9 or higher in an amendment to General Preference Order E-6 issued Oct. 10. (T-986)

Manganese steel castings have been priced at Oct. 1-15, 1941, levels under Maximum Price Regulation No. 237.

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For copies of above announcements address Office of War Information, Washington, giving announcement number as shown in parentheses after each paragraph. (*For example,* WPB-600 *means announcement* 600 *issued by the War Production Board.*)

Revisions to The Iron Age Priorities Guide

• • • The following data, together with all intermediate weekly revisions in THE IRON AGE, should be added to THE IRON AGE Priorities Guide published with the issue of October 8 to bring the Guide up to date.

"Priorities Regulations":

No. 3...Amended (10-3-42) to provide more flexible procedure for extending preference ratings to obtain operating supplies by companies not under PRP. Requires certificate number as well as name on endorsements.

No. 11...Amended (10-3-42) to give firms under PRP the privilege of extending ratings served on them.

No. 12...Amended (10-3-42) to cancel permission formerly granted PRP units to revise their own rating patterns twice a month.

"M" Orders:

M-10...Amended (10-10-42) to cover all vinyl polymers.

M-68-3...Permits California oil well operators to use materials for rehabilitation of old wells (10-8-42).

M-84...Amended order prohibits production of agave fiber cordage for non-essential civilian purposes (9-28-42).

M-104...Amended order makes clear that blackplate rejects are subject to quota restrictions (9-28-42).

M-115...Amended (10-5-42) further conserves use of tin in dental and shaving cream tubes.

M-154...Amendment No. 3 (10-2-42) postpones effective date of scheduling provision of order until Nov. 1.

M-212...Restricts delivery and use of petroleum coke to certain essential war uses (10-10-42).

M-240...Places vinyl acetate under complete allocation control (10-8-42).

"P" Orders:

P-46...Order extended for 10 days (10-1-42).

P-68...Amended (10-3-42) to give iron and steel, ferro-alloy and blast furnace coke producers higher ratings for repair and maintenance supplies.

P-98-d...Order makes use of PD-311 mandatory for materials used outside U. S. (10-1-42).

P-129...Superseded by P-133 (10-5-42).

P-133...Provides preference ratings for maintenance and repair supplies for radio communications (10-5-42).

"E" Orders:

E-6...Amendment No. 2 (10-10-42) limits sales and deliveries of hand tools to orders rated A-9 or higher.

E-7...Amendment No. 1 (10-6-42) permits sale of low-alloy steel hacksaw blades which are used in ordinary hand frames.

"L" Orders:

L-30...Amendment No. 8 (9-30-42) fixes October quota for processing of iron and steel into kitchenware at 70 per cent of base period for items on Group I and 50 per cent under Group II.

L-38...Amended order prohibits production of additional types of air conditioning and commercial refrigeration equipment (9-26-42).

L-49...Amendment (10-8-42) limits the amount of steel for a full-sized bedspring after Dec. 1 to 15 lb.

L-64-a...Freezes in the hands of manufacturers caskets of certain specified measurement which contain more than 25 per cent of iron or steel (10-2-42).

L-71...Amended (10-2-42) places dry cell batteries and flashlights for civilian use under complete control.

L-78...Amendment No. 4 (10-1-42) extends restrictive provisions concerning fluorescent lighting fixtures until Oct. 20.

L-208...Halts operations of all gold mines except those small mines under P-56 (10-8-42).

posed to shove the clock back two months. Then along comes this rating business—everything being upgraded again. I guess we'll live to see AAAAAAAAIX special. * * *

"I hope you don't mind me letting go like this. Truth is, the whole thing has me nuts. I need a vacation, but everywhere you want to go it is unpatriotic to drive a car, if you ride in a Pullman you are stealing the space from some sergeant who hasn't been drunk for a week (my son is a sergeant in artillery, going into Officers' School tomorrow). I take these things seriously, and when I read that we need steel, I want this country to have steel; so my boy will have something to shoot and to stick into these b——. So, please get these ratings raised so we can keep the furnaces running."

Export Quotas Set by M-148

Washington

• • • An export quota system for producers of specific steel products, aimed at spreading the load of export orders within the industry was established by WPB on Tuesday by an amendment to Order M-148. Export quotas for steel producers will be set up by the Director General for Operations within the quantities for which BEW has been authorized to assign preference ratings.

Stated in another way producers may accept orders for export of steel products covered by the supplement only to the extent of the quota assigned by WPB.

Producers may accept orders for unlisted steel products, and distributers may accept orders for all products when such orders bear appropriate ratings and are supported by valid export licenses, without reference to WPB. Export licenses and preference ratings covering steel products listed by the supplement will be issued by BEW which will continue to be responsible for determining the amounts to be exported to individual countries and individual purchasers within the assigned quota.

Steel producers who fill purchase orders for exports under BEW licenses are required to file with the WPB Iron and Steel Branch upon shipment a copy of BEW-138 listing the material shipped, date of shipment, destination, etc.

Government Jobs Take 82% of Structural Steel

Colorado Springs

• • • **The structural** steel fabricating industry is almost completely dependent upon the government for its current work, according to T. H. Hendrix, Director of Statistics of the American Institute of Steel Construction, in his report to the convention of that organization. This is coincident with a trend toward larger individual jobs and a decline in small miscellaneous jobs which normally occupy the vast number of small independent shops in the industry. Mr. Hendrix also reported a rapid curtailment of government construction. He said:

"In 1939 our bookings of fabricated structural steel amounted to 1,305,049 tons; in 1940, 1,748,144 tons, a gain of 34 per cent; in 1941, 2,296,954 tons, a gain of 31 per cent.

"Approximately 82 per cent of our work this year is the result of direct government work; over 79 per cent being for war plant expansion. Government financed bridges accounted for 2.2 per cent and government engineering projects less than .5 per cent this year, compared with 9.6 per cent and .6 per cent in 1941.

"Fabricated structural steel for railroad buildings and bridges has dropped to nominal figures. Last year railroad bridges constituted 4.1 per cent of our bookings, but this year it is less than 1 per cent.

"In 1941, jobs of less than 500 tons comprised 30.8 per cent of our total volume while similar sized jobs have comprised only 25 per cent in the first seven months of this year. The number of jobs averaging over 1000 tons each has increased from 55.1 per cent of the total in 1941 to 65.4 per cent so far this year.

"As of June 30, according to information furnished by the WPB, the cumulative volume of work scheduled on defense plant expansion since the start of the war program was $6,660,408,000 of which at that date $2,990,032,000 had been completed. The estimated requirement for 1942 was $2,550,000,000. Of this, $1,527,171,000 had been completed in the first six months."

Construction Gains, Federal Work Triples

New York

• • • **Engineering** construction volume for the week totals $139,855,000, an increase of 78 per cent over the corresponding week last year, but 31 per cent lower than a week ago as reported by *Engineering News-Record*. Federal work more than triples that for the 1941 week and is responsible for the 98 per cent gain in public construction. Private work, however, is 19 per cent below a year ago. Public work falls 34 per cent below a week ago, as a result of the 35 per cent decline in federal construction, but the private volume is up 21 per cent compared with the preceding week's total.

Third Quarter Steel Output Second Highest

STEEL PRODUCTION for the third quarter of the year was the second highest quarterly total in history and missed the all-time record hung up in the second quarter by only about 82,000 tons which was not bad considering the staggering third quarter total of 21,449,359 tons. This figure was also 4 per cent above the production in the same quarter of last year and the total for this year to date of 64,019,606 tons reflected a consistant gain of 4 per cent over last year's production. The nine months total for this year exceeds the tonnage produced in any whole year prior to 1940, including the years of World War I.

YEAR 1942

Based on Reports by Companies which in 1941 made 98.5% of the Open Hearth, 100% of the Bessemer and 87.8% of the Electric Ingot and Steel for Castings Production

Period	Estimated Production—All Companies								Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL			
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,328,128	95.4	490,864	86.0	305,930	96.3	7,124,922	94.7	1,608,335	4.43
February	5,791,813	96.7	453,543	88.0	275,700	96.2	6,521,056	96.0	1,630,264	4.00
March	6,574,701	99.1	493,294	86.4	324,916	102.3	7,392,911	98.2	1,668,829	4.43
1st Quarter	*18,694,642*	*97.0*	*1,437,701*	*86.7*	*906,546*	*98.3*	*21,038,889*	*96.3*	*1,635,994*	*12.86*
April	6,346,707	98.8	454,583	82.2	321,023	104.4	7,122,313	97.7	1,660,213	4.29
May	6,600,376	99.5	454,054	79.5	332,460	104.7	7,386,890	98.2	1,667,470	4.43
June	6,247,302	97.2	452,518	81.8	322,335	104.8	7,022,155	96.4	1,636,866	4.29
2nd Quarter	*19,194,385*	*98.5*	*1,361,155*	*81.2*	*975,818*	*104.6*	*21,531,358*	*97.4*	*1,654,985*	*13.01*
1st 6 months	*37,889,027*	*97.8*	*2,798,856*	*83.9*	*1,882,364*	*101.5*	*42,570,247*	*96.9*	*1,645,545*	*25.87*
July	6,350,047	95.7	453,684	79.6	345,093	96.3	7,148,824	94.5	1,617,381	4.42
August	6,420,496	96.6	467,313	81.8	345,642	96.3	7,233,451	95.4	1,632,833	4.43
September										4.28
3rd Quarter										*13.13*
9 months										*39.00*
October										4.43
November										4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										52.14

Note—The percentages of capacity operated in the first 6 months are calculated on weekly capacities of 1,498,029 net tons open hearth, 128,911 net tons Bessemer and 71,682 net tons electric ingots and steel for castings, total 1,698,622 net tons; based on annual capacities as of Jan. 1, 1942, as follows: Open hearth 78,107,260 net tons, Bessemer 6,721,400 net tons, electric 3,737,510 net tons. Beginning July 1, 1942, the percentages of capacity operated are calculated on weekly capacities of 1,500,714 net tons open hearth, 128,911 net tons Bessemer and 81,049 net tons electric ingots and steel for castings, total 1,710,674 net tons; based on annual capacities as follows: Open hearth 78,247,230 net tons, Bessemer 6,721,400 net tons, Electric 4,225,890 net tons.

The Iron Age Critical Tool Locating Chart

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Compiled from latest WPB data on available machine tool capacity.

CRITICAL TOOLS	REGIONAL OFFICES—WAR PRODUCTION BOARD										
	Total	No. 1 Boston	No. 2 New York	No. 3 Philadelphia	No. 4 Atlanta	No. 5 Cleveland	No. 6 Chicago	No. 7 Kansas City	No. 8 Dallas	No. 11 Detroit	No. 12 Minneapolis
BORING											
Horizontal—3" Bar	48,963	7,302	13,064	4,818	.....	11,131	7,567	1,316	275	2,574	916
" —To 4" Bar and Over	54,105	5,273	6,707	8,450	.....	17,474	7,616	3,378	1,946	1,829	1,432
Vertical—54"	31,780	3,713	4,615	4,561	.....	8,285	3,754	3,222	1,020	656	1,954
" —To 84"	46,633	4,072	5,984	7,889	.....	14,084	5,419	3,605	3,071	1,025	1,484
" —To 120"	16,923	1,747	2,656	2,354	.....	5,375	1,812	1,355	524	432	668
" —Over 120"	6,189	.....	1,427	1,218	.....	2,246	861	232	37	.....	168
Jig Borers	29,102	7,285	7,121	2,271	.....	4,733	3,840	809	318	2,611	113
Misc. Precision—Heald—Ex-Cell-O type	18,721	1,756	829	1,333	.....	7,756	4,509	1,586	150	574	228
BROACHING	67,052	15,075	9,830	4,569	.....	15,123	11,970	3,806	560	4,384	1,735
DRILLING											
Radial 6' to 8' Radius	68,442	6,687	13,575	10,635	.....	21,313	6,309	4,404	1,704	2,090	1,725
Over 8' Radius	3,779	138	767	1,226	.....	196	96	432	689	175	60
DUPLICATING AND PROFILING	28,453	10,719	6,254	2,484	.....	3,595	3,070	631	.....	1,556	144
FORGING											
Drop—Hammer—Board 100 lb. up	121,551	37,795	41,850	8,520	.....	22,115	8,499	1,238	834	.....	700
Steam 5000 lb. up	9,182	1,271	2,026	559	.....	2,739	628	1,305	.....	266	388
Press—Forging—Steam Hydr. 500 ton	5,432	1,024	1,562	240	.....	1,635	645	218	.....	60	48
GEAR CUTTING											
Gear Hobbers—48" and up	19,542	2,803	1,112	2,708	.....	6,298	2,235	1,758	522	1,230	876
Bevel Gear Cutters	43,243	10,158	4,533	3,242	.....	13,619	5,189	2,116	488	3,366	532
GRINDERS											
Centerless	35,417	8,143	4,413	3,799	.....	7,774	4,075	1,678	56	5,307	172
External Cyl.	380,153	94,935	78,516	34,969	.....	61,436	42,593	23,180	5,230	26,981	12,313
Internal Cyl.	122,187	26,211	17,598	9,671	.....	21,817	17,191	10,746	4,987	9,987	3,979
Thread	4,511	680	1,599	628	.....	528	572	.....	336	168	.....
LATHES											
Engine—24" Dia.—Over 60" c.-c.	200,553	30,800	35,231	26,993	.....	48,381	21,954	13,712	10,414	5,449	7,619
" —Over 24" Dia.—To 60" c.-c.	83,370	15,890	20,769	7,820	.....	14,328	7,765	8,688	3,297	1,821	2,992
" —Over 24" Dia.—To 96" c.-c.	127,275	17,640	25,917	13,495	.....	32,963	11,381	13,421	6,102	2,828	3,528
" —Over 24" Dia.—Over 96" c.-c.	309,506	45,817	46,143	46,646	.....	72,249	27,894	32,222	22,696	8,531	7,308
Turret—12" Dia. 2½" Bar and up	88,953	13,433	25,807	12,215	.....	17,988	8,451	4,620	2,252	2,407	1,780
" —To 24" Dia. 2½" Bar and up	158,138	20,567	27,640	22,627	.....	36,467	13,879	15,485	8,788	7,476	5,209
" —Over 24" Dia. 2½" Bar and up	39,810	3,099	5,435	6,908	.....	8,449	6,378	4,553	2,768	964	1,356
Automatic—12" Diameter	14,677	2,149	2,077	850	.....	989	5,861	966	336	1,220	229
" —To 24" Diameter	13,387	1,846	943	336	.....	1,779	624	746	.....	6,776	337
" —Over 24" Diameter	1,610	.....	90	48	.....	168	1,248	.....	.....	.....	56
SCREW MACHINES											
Automatic—Single 1"	75,489	14,965	27,141	9,608	.....	10,330	9,541	1,678	884	1,090	252
" —Single to 3"	83,578	13,735	17,988	8,913	.....	15,135	11,468	2,604	881	12,578	276
" —Single—Over 3"	16,628	2,432	1,103	2,312	.....	2,615	6,234	168	.....	1,668	96
" —Multiple—To ¾"	5,601	992	1,254	1,270	.....	1,074	336	.....	.....	675	.....
" —Multiple—To 1"	93,001	19,359	16,754	9,183	.....	13,026	15,639	3,918	.....	14,562	560
" —Multiple—To 3"	62,593	9,903	8,650	8,301	.....	13,439	11,302	6,407	84	4,395	112
" —Multiple—Over 3"	6,193	1,968	108	241	.....	504	3,028	.....	.....	344	.....
MILLING											
Standard Type—Horizontal—No. 3	215,404	43,349	46,266	20,487	.....	43,664	26,963	12,753	5,559	10,012	6,351
" " —Horizontal—Over No. 3	96,550	14,710	20,165	14,280	.....	21,333	9,065	6,842	3,374	4,071	2,710
" " —Vertical—No. 3	41,316	11,701	7,197	3,692	.....	8,065	5,386	1,517	418	3,057	283
" " —Vertical—Over No. 3	45,206	14,154	5,965	5,321	.....	9,782	4,098	1,323	484	3,231	848
Mfg.—Horizontal—12" table width	26,346	9,271	4,620	1,068	.....	4,113	4,336	1,114	232	736	856
" —Horizontal—Over 12" table width	16,469	3,003	1,764	564	.....	4,830	4,430	980	220	341	337
Planer—Over 30" table width—slab mill	8,018	1,856	1,577	778	.....	1,930	456	549	.....	228	644
" —Over 30" table width—side spdl.	2,240	359	266	930	.....	185	84	144	128	.....	144
" —Over 30" table width—vert. spdl.	6,402	1,444	1,812	866	.....	1,170	286	.....	148	288	388
" —Over 30" table width—side and vert.	8,504	1,737	708	682	.....	2,561	2,086	120	.....	382	228
Misc. and Dia. Cutting—Heller Type	17,438	5,561	5,066	666	.....	4,262	485	316	.....	1,082	.....
PLANERS											
60" wide to 15'	11,471	1,078	2,029	1,570	.....	2,554	1,681	997	1,228	278	56
60" wide, over 15'	5,295	1,226	429	812	.....	934	710	584	600	.....	.....
Over 60" wide to 15'	3,596	276	449	486	.....	1,701	168	130	37	175	174
Over 60" wide, over 15'	7,645	1,244	1,157	1,795	.....	1,884	512	457	112	204	280
THREADERS											
External Mills	24,512	6,177	2,994	3,283	.....	4,529	3,361	892	112	2,439	725
Internal Mills	5,161	66	1,806	305	.....	1,340	1,260	216	168	.....	.....
TOTAL AVAILABLE HOURS	3,083,295	578,594	593,358	351,495	.....	653,893	366,800	205,137	94,069	164,597	15,369

The available critical tool hours per week here shown are based on an 168-hour week and represent usable tool hours subject to operating labor available. Reports are based on initial inspection of the plants concerned by engineers trained for this work. The War Production Board Field Offices are acting as clearing houses for all public or private contractors or agencies interested in using these facilities.

When making inquiries regarding the availability of these critical tool hours for specific jobs, communicate in detail with the Regional Supervisor, Critical Tools Service, in the WPB Region best located for your job. They are:

Region	*Supervisor*	*Assistant*	*WPB Office*
No. 1 Boston	R. F. Wood	H. H. Whitcomb	17 Court Street
No. 2 New York	J. J. Carroll	C. Philippi	122 E. 42nd Street
No. 3 Philadelphia	C. E. Reinicker	R. V. Hilands	1617 Penn. Blvd.
No. 5 Cleveland	C. J. Perrier	C. R. Griffith	Union Commerce Bldg.
No. 6 Chicago	S. C. Bloom	W. I. Buhl	20 N. Wacker Dr.
No. 7 Kansas City	W. A. Crooks	P. J. Leonard	Mutual Interstate Bldg.
No. 8 Dallas	B. P. Rhineford	W. E. White	4th Fl., Fidelity Bldg.
No. 11 Detroit	R. O. Cunningham	J. B. Shepard	7310 Woodward Avenue
No. 12 Minneapolis	E. H. Pitney		326 Midland Bk. Bldg.

PERSONALS . . .

• **John S. Chafee,** vice-president, Brown & Sharpe Mfg. Co., has been elected president of the National Machine Tool Builders' Association to succeed **George H. Johnson,** president, Gisholt Machine Co. **W. W. Tangeman,** vice-president, Cincinnati Milling Machine Co., was elected first vice-president of the association, and **F. H. Chapin,** president, National Acme Co., was named second vice-president. **David Ayr,** president, the Hendey Machine Co., was elected treasurer. Both Mr. Tangeman and Mr. Chapin were elected directors, as was **Joseph L. Trecker,** vice-president, Kearney & Trecker Corp.

• **George Rentschler,** president of the General Machinery Corp., Hamilton, Ohio, and **William H. Houghton,** comptroller of Bendix Aviation Corp., have been elected directors of Bendix.

• **W. Louis Bunting** and **William S. Jaskinsky** have been made superintendent and assistant superintendent of plate mills, respectively, for Lukens Steel Co., Coatesville, Pa. Mr. Bunting first entered the employ of Lukens Steel Company as a water tender in 1909. During 33 years with the company, Mr. Bunting worked successively as a furnace recorder, millwright, clerk, pit craneman, pit helper, tableman, screwman, and roller. In 1933, he supervised the rolling on the company's five plate mills. In 1937, he became superintendent of the 140 in.-206 in. mills and held this post until his recent promotion. Mr. Jasinsky's rise with Lukens parallels that of Mr. Bunting. He was first employed by the company as a layer-out in 1917. Except for one month he has been with Lukens successively as a finisher, foreman, general foreman of all plate mills, and superintendent of the 84 in. and 112 in. mills, until his recent appointment to his present post.

• **Robert C. Sessions,** of the consulting engineering firm of Sessions & Sessions, Cleveland, has been appointed chief engineer of the Brown Fintube Co., Elyria, Ohio.

• **Whitney C. Collins** has been named vice-president in charge of sales policy for the Elastic Stop Nut Corp., Union, N. J. He has been a director of the company since 1940. In 1932, Mr. Collins, formed the Collins-Powell Co., of Beverly Hills, representing the Elastic Stop Nut Corp. as sales engineers.

• **Carl Gallauer,** vice-president in charge of sales for Moise Steel Co., Milwaukee, has been appointed industrial salvage representative in Wisconsin for the WPB under W. E. Simons, deputy salvage manager for the state.

JOHN S. CHAFEE, president, National Machine Tool Builders' Association.

• **George W. Sheridan** has been made treasurer of War Materials, Inc., Pittsburgh, scrap collection agency for the Metals Reserve Co. Mr. Sheridan was associated with the West Leechburg Steel Co., from April, 1906 to September, 1936, at which time the company was merged with Allegheny Steel Co. At that time Mr. Sheridan was secretary-treasurer, controller, and a director of the company.

• **Merrill Cox** has been appointed sales manager of the iron and steel division, Arthur G. McKee & Co., Cleveland. He succeeds George B. Garrett who was killed in a recent train wreck while en route to Washington. At the time of this appointment, Mr. Cox held the position of assistant chief engineer in the company's iron and steel division, and previously had served both as service and sales engineer in this division.

• **A. J. Miller,** who has been in the Detroit office of the Norton Co., Worcester, Mass., for a number of years, has been appointed field engineer for that territory.

• **J. C. Vandermast** has been named manager of pipe sales, the Pittsburgh Tube Co.

• **Russell G. Davis** has been elected vice-president of the Foote Brothers Gear & Machine Corp., Chicago. Mr. Davis will continue in his capacity of general manager of the industrial gear division.

• **J. W. McCartney** has been elected assistant secretary of the Sword Steamship Line, Inc., and the Marine & Maintenance Corp., Bayonne, N. J. He will continue as general purchasing agent of the two corporations.

• **R. S. Brown** has been appointed to represent the Ajax Electric Co. in the New York metropolitan area, including northern New Jersey and eastern New York State.

• **Elmer L. Ford,** manager of New England operations of the Turner Construction Co., New York, has been elected a director to fill the vacancy caused by the recent death of Arthur C. Tozzer.

• **R. Elliott Maxwell** has been named vice-president of the Whiting Corp., Harvey, Ill. Mr. Maxwell will make his headquarters in the New York office of the company, 136 Liberty St., and will supervise the sales force in the eastern half of the country. **D. Polderman, Jr.,** formerly district sales manager of the New York-Philadelphia district, has been made a member of the executive committee.

• **Harry Newcomb** has been elected a vice-president of Servel, Inc., Evansville, Ind. He continues as general manager of Servel's electrical refrigeration and air conditioning division.

• **Thomas H. Miller,** mining engineer, metallurgist and an authority on metallic minerals, has been named chief of the Metals Economics Division of the Bureau of Mines.

• **A. W. Thomas,** sales manager of the Construction Machinery Division of Chain Belt Co., has left for Washington, where he will be a "dollar-a-year" man as consultant for the Construction Machinery Division of the WPB.

• **Robert W. Renton** has become affiliated with the Lea Mfg. Co., Waterbury, Conn., to work as field consultant. Mr. Renton has represented the J. B. Ford Sales Co. for several years in the Ohio area and his efforts in his new connection will be in the Middle West, chiefly in the state of Ohio.

• **John W. Kiely** has been appointed purchasing agent for the Ingalls Iron Works Co., Birmingham. Mr. Kiely went to Ingalls from the purchasing department, City of Chicago Park Board.

• **D. W. Ellison** has been named purchasing agent, Cockshutt Plow Co., Brantford, Canada, succeeding **W. B. Scace,** who has been compelled to retire because of ill health.

• **George W. Rooney** has been elected vice-president and comptroller of United States Steel Corp. of Delaware, Pittsburgh, and a member of the board of directors and executive committee of that company. Mr. Rooney will relinquish his present position as comptroller of United States Steel Corp., the parent company.

• **A. O. Thalacker** has been appointed general manager of the Detroit Rex Products Co. Mr. Thalacker has been a company executive for the last five years and lately has been Secretary, a position he retains in addition to his new responsibility.

• **William J. Sampson, Jr.,** formerly general manager of sales for the Steel & Tubes division of Republic Steel Corp., has been named president of the American Welding & Mfg. Co., Warren, Ohio. Mr. Sampson succeeds Howard J. Kaighin, who was killed in an automobile accident on Sept. 4. In 1927, Mr. Sampson was made manager of the recently acquired plant of Steel & Tubes, Inc., at Toledo, and about two years later returned to Cleveland as vice-president. In 1930 he was named president of the company, and served in that capacity through 1932, at which time, under a reorganization as a subsidiary of the Republic Steel Corp., he became vice-president in charge of sales. He was made assistant general manager of sales for Republic Steel in 1937, and in the fall of 1941 returned to the Steel & Tubes division as general manager of sales.

• **H. L. Watson,** since 1934 executive vice-president and director of the De Laval Steam Turbine Co., Trenton, N. J., has been elected president of the company, succeeding Francis J. Arend, who died Aug. 24, 1942. From 1913 to 1934, Mr. Watson was general sales manager. He graduated from Rose Polytechnic Institute, Terre Haute, Ind., in 1905 and served as erecting engineer and later as sales engineer, specializing in steam turbine work, with the Allis-Chalmers company until he entered the employ of De Laval

• **E. E. Lundberg,** vice-president of Briggs Mfg. Co. in charge of engineering, has been appointed to the board of directors to take the place of the late Howard Bonbright. **F. W. Hofmann,** who was assistant factory manager of all Briggs plants before the complete changeover to war production, has been named a vice-president. Since the war program began Mr. Hofmann has been in charge of production of major assemblies of aircraft components.

• **Joseph DeJure** has been named representative for eastern Pennsylvania, New Jersey, Delaware, Maryland and District of Columbia for American Swiss File & Tool Co.

• **Harry B. Catlow** formerly district sales manager for Truscon Steel Co. has been appointed general manager of sales of Republic Supply Co., Houston, Tex.

• **A. O. Thalacker** has been appointed general manager of Detroit Rex Products Co. He has been a company executive for the last five years and recently had been made secretary, a position he retains in addition to his new work.

• **R. L. T. Seidel,** chief metal pattern maker for the International Harvester Milwaukee plant the last 25 years, died Oct. 3 at his home there after a year's illness.

OBITUARY . . .

• **George S. Davison,** 86-year-old dean of the engineering profession in Pittsburgh died Oct. 3 at Cleveland. Mr. Davison at one time was president of the Gulf Refining Co. and other Gulf subsidiaries and was president or high official in many other concerns. At the time of his death he was chairman of the board of Pittsburgh Coke & Iron, president of the Pennsylvania Water Co., president of the Green Bag Cement Co. of West Virginia, and director of the Green Bag Cement Co. of Pennsylvania.

• **George B. Garrett,** sales manager, Iron and Steel Division, Arthur G. McKee & Co., Cleveland, died September 24. Except for service as an officer with the Corps of Engineers during World War I, he had been with Arthur G. McKee & Company since 1917 as service engineer, sales engineer and sales manager.

• **Herbert L. McKinnon,** vice-president of C. O. Bartlett & Snow Co., Cleveland, died Sept. 26, aged 72 years. Mr. McKinnon was widely known as a specialist in foundry equipment, having served as the company's chief engineer for 35 years.

• **Frank Low,** vice-president of the Ludlow-Saylor Wire Co., St. Louis, died Sept. 23. He was 84 years old.

• **Mrs. Jane B. Fairless,** wife of B. F. Fairless, president of United States Steel Corp., died at their home, Sept. 29, after an extended illness.

• **Alfred E. Ruemelin,** superintendent of the Ruemelin Mfg. Co., Milwaukee, for the last 10 years, died recently. He was 62 years old. Mr. Ruemelin was formerly superintendent of Heyl & Patterson, Inc., Pittsburgh.

• **David Stern,** president of the Standard Electric & Supply Co., Milwaukee, died Sept. 22 following a heart attack. He was 61 years old.

• **Ezra N. Janes,** died recently. He was born 52 years ago and had been an engineer for the Studebaker Motor Car Co., for many years and later joined Chrysler Corp.

McNutt; Nelson; Strike Figures Point to Manpower Control

• • • **Anyone skeptical** about the imminence of manpower-controlling legislation need only investigate the figures on labor supply, check the frequency of strikes these days, note the difficulties of the western non-ferrous mines with labor migration and turn an ear to the Washington big-wigs in the field, to feel assured that such legislation will come shortly.

It is intimated by all of these facts that control is going to be required to limit to some extent the powers of the Selective Service in drafting important workers, to stop shifting of labor from job to job, to force more workers from civilian supply industries into war industries and to demand training programs which will enable the war industries to assimilate women workers.

Part of this statement is borne out in the labor supply figures recently released by Paul V. McNutt, chairman of the War Manpower Commission and Donald M. Nelson, WPB chairman. These showed that three months ago our total laboring force amounted to about 54-million. During the month of August this figure shrank to about 52-million. This was due, it was said, to both the return to school of youngsters who worked during the summer and the effects of the draft and enlistments. Nevertheless, we are 2-million short in a working program that needed the whole 54-million and undoubtedly still does.

Balanced against this is the fact that of our labor reserve of 30-million, nearly 27-million are women, leaving only 3-million men as an actual reserve until war industries know fully how to use women workers. This situation certainly points to a need for some control over the powers of the Selective Service, which was responsible for a part of the 2-million drop in labor force, plus a definite need for a "command" training program to condition the 27-million women in our labor reserve for factory work.

Anyone who has followed the recent difficulties experienced with the migration of copper miners in the West, the labor piracy which has run rampant in West Coast shipyards, the difficulties of the scrap industry in keeping yard help to handle that precious item the troubles of the Western lumber industry, for instance, can quickly realize that something soon must be done also to put workers on war jobs and keep them there. Canada, who seems to be much more intent on war production in many ways than the U. S. was driven to job freezing about a month ago as was our own government in the instance of federal employees. Canada has set the precedent for the U. S. in other things such as price regulation and it could be that McNutt's move to job-freeze federal employees was the test case for us.

Probably the biggest cause for complaint, and the one getting most public attention at the moment is the growing frequency of strikes in war industries or interrelated industries. Some very revealing figures on the subject have been published by the U. S. Bureau of Labor Statistics. These show that new strikes per month have increased from 27 last January to the amazing high of 229 in August. This means new strikes occurring within the month—not including any carrying over from month to month. Man-days lost as a result of these strikes (all in war industries) started at 46,197 for January and grew to 266,353 in August. This is nearly 800 per cent increase in strikes and over 550 per cent increase in lost man-days. Although it is said that the number of men involved only represents about 3 per cent of the total war industry employment the staggering number of man-days lost plus the unknown loss in industries depending directly on certain strike-bound companies for vital supplies, indicates that a symbolic translation into battleships or aircraft not built as a result, would be impressive.

The actual figures of the Bureau of Labor Statistics are given below:

Month	*No. of Strikes*	*Man-Days Lost*
January	27	46,197
February	50	118,700
March	66	166,680
April	91	173,513
May	144	137,300
June	192	254,403
July	222	233,614
August	229	266,353

Total man-days lost this year, 1,396,760.

Available Machine Tools Easy to Locate

(See Chart on Page 111)

• • • The Critical Tools Service Section of the War Production Board has developed a compilation of machine tool capacity that has idle hours available for subcontracting.

Field engineers of the Critical Tools Service keep constant check on the availability of machine tools in their respective areas and file the results of their observations with their WPB Regional Office. Hence, this information, which includes tolerance limits for the various tools, etc., is comparatively close to you wherever you may be located. These offices will be quick to cooperate with you in locating the type of machine tool you need.

When making inquiries, please communicate in detail with the Regional Supervisor, Critical Tools Service, in the WPB Regional Office best located for your purpose. A complete list of these offices and the names of their supervisors are given at the bottom of the chart appearing in this issue of THE IRON AGE.

Producers At Cincinnati Believe Peak Is Passed

Cincinnati

• • • **A slowing of new** business coinciding with present cancellations of machine tool business, has brought many of the district machine tool producers to feel that the "hump" has been now passed. Production, of course, has not yet caught up with orders so that the general report indicates that backlogs have not changed considerably. However, with the easing up in demand, it is anticipated that should this continue the balance between production and new business is not far off. General comment, however, continues to be expressed that there should still be an extensive amount of machine tools needed and some comment is indulged that foreign countries should be in the need of a large amount of new equipment. Broadening of the demand promises to keep the picture bright.

NON-FERROUS METALS

. . . *Market Activities and Price Trends*

Labor Jump from Gold to Copper Called Doubtful

• • • **The plan of** transferring gold miners from the mines closed by WPB order, to the labor-short copper mines is regarded gloomily by some copper mining company officials, who feel there is little hope of luring or holding the gold miners. Not only is there a wage differential barrier, but the disparity in living conditions is thought to be an even greater obstacle. In particular, copper mine housing is frequently inadequate, and amenities of all kinds are just not present in most copper mining camps, especially in the West. This is blamed on the nature of the copper industry which has generally been a feast or a famine. In poor times of course no one was advocating enlargement of the mining camps; in good times there was always the feeling, "This can't last." The industry is in the latter mood at present, conscious of the huge quantities of copper scrap that will become available at the end of the war.

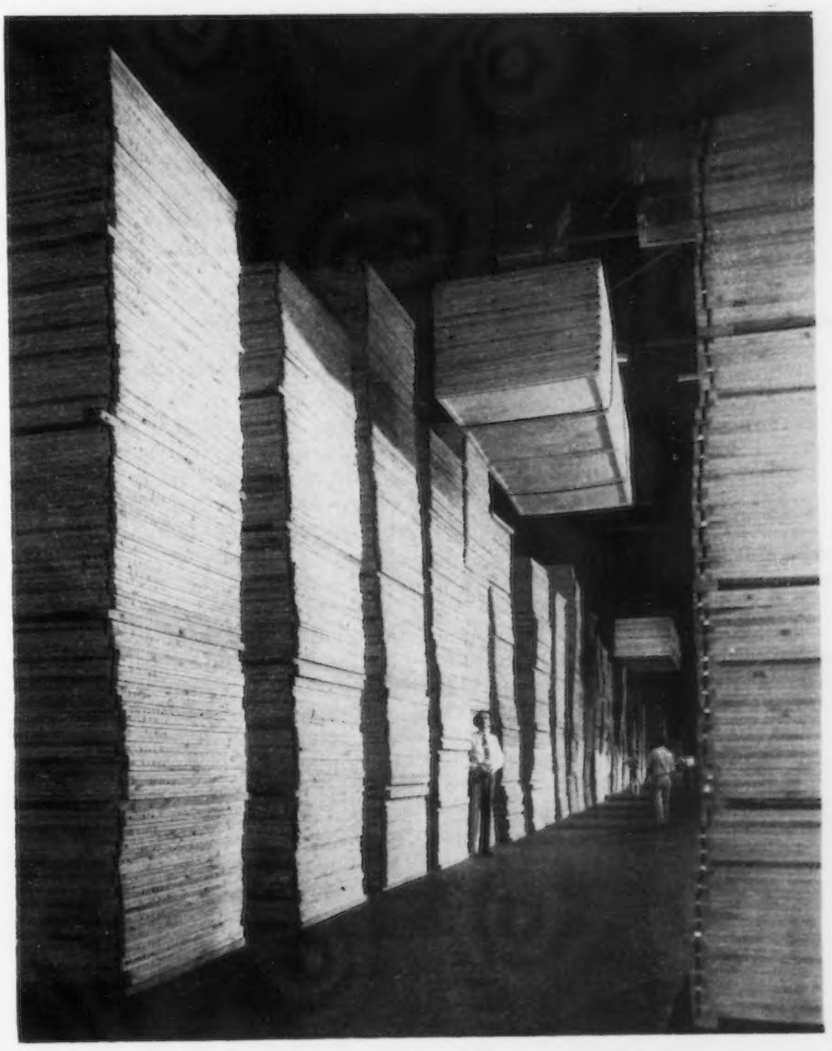
Several of the gold mining companies whose properties will be shut down are looking for deposits of strategic metals to exploit, or are planning to develop such deposits already in their hands. These enterprises will likely draw their labor supply, too, from the closed gold mines.

Really effective wage increases for copper miners, coupled with ceiling prices, would require heavy government subsidization, it is said. Already the government is paying hundreds of different bonuses and production inducements on non-ferrous metals. Incidentally, chances of fulfillment of the government's wish for doubled copper production are viewed skeptically by some mine officials, who believe we are now within 20,000 lb. of feasible potential domestic production.

Defense Plant Corp. has awarded contracts to the H. K. Ferguson Co., Cleveland and New York, to design and construct new facilities and add to existing facilities, in a plan to almost double the nation's present detinning capacity. Can preparation equipment will be added to plants at Carteret, N. J., East Chicago, Ind., Neville Island, Pa., and Baltimore. New plants, equipped with preparation facilities, will be built in New York, Buffalo, Chicago, Birmingham, Dallas and Los Angeles. Shredding plants will be constructed in about 17 metropolitan areas, among them Philadelphia, Washington, Syracuse, Cleveland, Cincinnati, Detroit, Toledo, Boston, Providence, Milwaukee, St. Louis. Metal & Thermit Corp., operators of the plant at Carteret and several others, is making its detinning process available to the government, and is acting as consultant to the Ferguson Co.

Cans of electrolytic tin plate are expected to begin entering detinning plants early next year, and the proportion will, of course, increase. In spite of the much lighter yield of tin from these cans, it is considered that it will be well worth while to reclaim the tin, not only for its own sake but because of the scrap iron.

ALUMINUM STOCKS SOAR: In spite of the heavy demands of the aircraft industry for sheet aluminum, this soaring stock, containing nearly 7,000,000 lb., is being built-up. This is credited mainly to the vast expansion program successfully carried out by the aluminum industry. The stock pictured, boxed and ready for shipment, is at the Aluminum Company of America.



SCRAP

. . . Market Activities and Quotation Trends

Lack of Planning Threatens to Impede Use of Public Scrap

• • • **With scrap reservoirs** rising by thousands of tons daily over the nation as campaigns achieved sensational success, transportation and preparation problems were increasing early this week. Failure to map out adequately the details beyond the initial collection stage threatened to arouse the public's wrath in more than one area.

Little of the donated scrap actually has been melted yet. Weeks will be required before it arrives at mills, but nevertheless steel plant operators are buoyed by the assurance that large scrap accumulations have been made. If necessary, volunteers can be found to help segregate and break up the material. England has even employed women for this work.

At Buffalo, an important scrap consumption center, the fact that allocations of scrap to mills ceased was credited to the success of the public drive.

The fact that around 500,000 tons of public scrap had been assembled by last Saturday in 10 states (per capita average of 32 lb.) was about the only optimistic factor of the week. The much publicized War Materials, Inc., which was supposed to have about $500,000,000 for use, was found to be incapable of action following New York City's presentation of a long list of projects which could be wrecked immediately. A story on the WMI collapse appears elsewhere in this issue.

Another disillusioning factor was the uncooperative action of some scrap dealers who had been counted on to assist the public drives. Most iron and steel scrap dealers recognize the public drives as a fortunate break for the industry, offering them a chance to regain public esteem. But a few are giving the industry another black eye in some areas by making it difficult for public officials to deal with them.

In New York (where 72,000 tons had been collected from three boroughs with several more to be collected later) only four of 135 firms bid on only 5000 tons of the first 15,000 tons collected, and their bids were from $4.48 to $5.26 per ton. Mayor LaGuardia reported being under pressure from scrap sources to supply transportation to the yards, to ease dimout and draft regulations.

Late last week, a tabulation of the scrap collected in drives in ten states showed Kansas leading with a per capita average of 72.1 lb. Kansas had collected 65,000 tons; Utah, 17,000; Oregon, 25,000; Pennsylvania, 148,000; New York, 147,000; Colorado, 13,000; Michigan, 51,000; Virginia, 25,000; Delaware, 3000 and Montana, 4500.

Meanwhile, the drive among industries was gaining headway. Groups of salesmen were starting out to make a series of calls on plants at intervals of 30 days hoping to move all dormant scrap and equipment.

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La Guardia and Scrap Men Reach Passage at Arms

New York

• • • **The New York scrap** drive, which has so far yielded 72,000 tons with collections from Manhattan and the Bronx still to be made, has resulted in a tiff between the scrap dealers and Mayor La Guardia. The Mayor, who received only four replies to his request for bids from 135 dealers on Queens scrap, threatened junk dealers with the loss of their licenses, and warned that the metal might reach the mills "by some other channel that we are now planning" if the dealers could not handle it satisfactorily.

The dealers, on the other side, objected to competitive bids on material which they must sell at ceiling prices, and emphasized the extraordinary difficulties of segregation and preparation; some of them advocated allocation of scrap to junkyards, a method followed in North Jersey.

In the meantime, William Jacobus, the Navy's first scrap metal salvage expert, said the scrap piles as they stand are probably worth $120 a ton or more, instead of the $4.48 to $5.26 bid for the Queens scrap. He based his rosy figures on the estimated presence of tin, copper, pewter, and other valuable metals in the household scrap, and suggested that civilian defense volunteers sort the piles.

Monday afternoon the scrap dealers, Edwin Barringer, president of the Institute of Scrap Iron and Steel, and the Mayor were to meet and offer each other proposals.

Plans for salvaging, at a cost of $2,723,000, about 50,000 tons of scrap metal through demolition of buildings, bridges, etc., got nowhere, with Robert Moses, director of this phase of the city's campaign, resigning because he could get no action from John M. Hopwood of War Materials, Inc., and Mr. Hopwood threatening resignation because WMI can get no action from WPB.

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Steel Men's Scrap Drive

Philadelphia

• • • **The steel industry** in the eastern Pennsylvania area has mobilized its sales forces to bring in enough scrap, before snow falls, to swell the nation's scrap pile to the 7,000,000 tons needed to assure peak production throughout the snowy months. This was learned from H. E. Richardson, district sales manager for Youngstown Sheet & Tube Co., who has been named chairman of the scrap committee representing all of the steel companies and steel warehouses in eastern Pennsylvania, New Jersey and Delaware. S. E. Husted, assistant district sales manager for Bethlehem Steel Co., here, was named vice-chairman.

In a meeting held Saturday a week ago, attended by 105 salesmen representing all of the major steel companies, plans were drawn up and customers allotted to each salesman to call upon in an effort to locate scrap in their own customers' plants. Each salesman calls on the list of customers given to him, going through each plant with some executive of the plant in an effort to point out obsolete equipment and unusable metal objects which are frequently overlooked by men who are accustomed to the plant. When such material is located the salesman reports to the Salvage Section of WPB whose job it is to see that the collection is made.

New Change Permits Inclusion of Galvanized

• • • **New specifications** for No. 2 heavy melting steel scrap permitting the inclusion of galvanized material meeting size specifications in the No. 2 heavy melting grade, as well as uncut bumpers, rear ends, and front axles of passenger automobiles, were announced Oct. 9.

Galvanized material previously had been ruled an inferior grade and priced at a differential below the price of No. 2 heavy melting. Uncut rear ends were considered unprepared everywhere except on the Pacific coast.

The change is contained in Amendment No. 8 to Revised Price Schedule No. 4—Iron and Steel Scrap—effective Oct. 15.

In another change, the price schedule's section governing brokerage commissions has been amended to incorporate established interpretations of that portion of the schedule which provides that no commission shall be payable to a person for scrap he prepares.

New provisions of the section on brokerage commissions follow:

"No commission shall be payable to a person for scrap which he prepares; nor shall any commission be payable to a person controlling, or holding directly or indirectly, a substantial financial interest in, the person preparing the scrap, or to a person controlled by the person preparing the scrap, or to a person in whom the person preparing the scrap holds directly or indirectly a substantial financial interest."

Other changes and additions include:

1. No. 2 busheling: The maximum price for No. 2 busheling has been increased $1.50 per gross ton and specifications have been liberalized by raising the maximum dimension from 8-in. to 12-in.

2. Baled machine shop turnings: A new grade of scrap—baled machine shop turnings—has been inserted in the schedule in response to requests from scrap dealers and consuming mills. Baled machine shop turnings are defined as ordinary machine shop turnings hydraulically compressed into bundles weighing not less than 75 lb. per cubic foot. They may not include any binding or wrapping material. Baled turnings are of greater melt value than unbaled turnings. A differential of $4 per gross ton between unbaled turnings and baled turnings has been created. This is identical with the differential in price between unprepared light iron and No. 2 bundles.

3. Low phosphorus and sulphur slab and heavy plate crops: The specifications for billet, bloom and forge crops have been amended to specifically include low phosphorus and sulphur slab and heavy plate crops of not less than 2-in. in thickness.

4. Crushing charge on turnings: The special preparation charge for crushing turnings has been changed to exclude any premium for crushing heavy turnings.

5. New preparation charge provision: A new provision requiring prior approval for any preparation charge arising out of the preparation of scrap by a dealer after the scrap has arrived for unloading at the consumer's plant has been added to the section of the schedule covering special preparation charges. Prior approval for any preparation charge of the foregoing type must be obtained from the OPA, Washington.

6. Inferior unlisted grades: Provisions of the schedule governing inferior unlisted grades have been amended to allow OPA to adjust the price of an unlisted inferior grade where the seller's base period experience has been inadequate or unrepresentative, also to provide for cases in which the sellers of an unlisted grade did not sell such a grade during the base period of Sept. 1, 1940, to Jan. 31, 1941. Amendment No. 8 provides that in such cases the seller shall apply to OPA, Washington, for the establishment of an appropriate price.

7. Preparation-in-transit: A provision covering preparation-in-transit of allocated unprepared scrap to consumers lacking preparation facilities now is provided.

The amendment provides that if unprepared scrap in rail carload lots is allocated by WPB to a consumer lacking preparation facilities, the consumer may designate a dealer or dealers to prepare the scrap on a preparation fee basis. The maximum preparation fee shall be the usual schedule differentials, i.e., $2.50 per gross ton for No. 1 heavy melting steel, $3.50 per gross ton for cut auto scrap (1-ft. and under), and $4.00 per gross ton for No. 1, No. 2 and No. 3 bundles. The maximum delivered price shall be the shipping point price for the unprepared scrap at the original shipping point, plus the rail freight charges incurred in moving the scrap to the dealer's yard, plus the applicable preparation fee, plus specified freight charges from the dealer's yard to the point of delivery.

8. High manganese steel scrap: Amendment No. 8 raises the price of high manganese steel scrap having dimensions greater than 12-in. by 24-in. by 8-in. Where high manganese steel scrap meeting these size specifications, containing at least 10 per cent manganese, and suitable without further preparation for direct charging into an electric furnace is sold for electric furnace use only, the schedule has provided that the basing point price at the applicable basing point shall be $7 per gross ton above that for No. 1 heavy melting steel. The new amendment provides, if the material is larger than 12 in. by 24 in. by 8 in. and is sold for electric furnace use only, the basing point price at the applicable basing point shall be $3 per gross ton above that for heavy melting steel scrap.

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BIRMINGHAM — From a tonnage standpoint, the newspaper drive has met with a large measure of success throughout this region. Many contributions cannot be used by open hearths. There are problems of separating, grading and preparing the material, aggravated by the labor shortage at dealers' yards.

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BUFFALO—A decided improvement in the flow to the mills has been noted here following the most successful scrap drive in local history. Cooperation on the part of both public and industry has exceeded all expectations, drive officials report, and results will go a long way toward assuring capacity operations at steel plants in this area this winter. Public and parochial school children played no small part in this campaign. It is significant, too, that no allocations have had to be made to mills in this area in some time.

•

CLEVELAND—One of the most constructive collection programs yet inaugurated got underway this week following a meeting of some 135 steel salesmen, steel warehouse salesmen, and managers of sales in this area, who will begin an intensive campaign to find all of the dormant scrap in industrial plants in Cuyahoga and 18 other northeastern Ohio counties. The districts in which committees have been set up include Cincinnati, Dayton, Toledo, Youngstown, Cleveland, and Columbus, Ohio; Wheeling, W. Va.; and Pittsburgh.

•

PITTSBURGH—Scrap flow is slightly better here at Pittsburgh, but the excess supplies are immediately being utilized to raise the district operating rate and little or no material is being put away for the winter months. Reports on local scrap drives from a tonnage standpoint are said to be exaggerated and the final weighing in and separation will probably show a more conservative figure from the tonnage standpoint. The steel industry and the scrap industry are aghast at the emasculation of WMI which was recently reduced to a mere shell. Great hopes had been pinned on this organization to obtain above ceiling scrap.

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ST. LOUIS—An organization of 100 salesmen and sales managers for 28 steel companies in the St. Louis industrial district was formed at a meeting in the Chamber of Commerce Building to take part in the national campaign for scrap. Bennett C. Macgregor, district sales manager for the Bethlehem Steel Co., is chairman of the group.

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TORONTO — Dealers report a brisk movement. Much of the improvement is due to the outpouring of rural scrap. Most yards have been forced to pile big stocks for future handling as yard crews are not able to sort and classify all incoming material.

•

PHILADELPHIA—Recent civic scrap drives here have accomplished much toward the immediate relief of steel mills in this area. All scrap consumers and the scrap trade generally state that shipments to the mills have been better the last two weeks and expect the trend to continue for possibly the next 30 days. Piles of scrap, covering literally acres of space here, indicate that the scrap increase will be noticeable for at least this long. As a result, steel production in the area is not expected to be affected downward due to scrap shortages for some time. A scrap drive being conducted by the steel mills of the area is also soon to bear fruit and will aid in the near future.

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ST. LOUIS—Collections for the first week of the United Scrap Metal Drive for St. Louis and St. Louis county amounted to 14,524 tons, of which 4700 tons were by school children and 9824 tons industrial and other heavy scrap reported by the WPB.

The overall local quota is 72,000 tons. The State Education Department estimated that the 750,000 school children in Missouri collected 20,000 tons during the week. Since the drive began the commercial scrap gathered from the states, farms and home is estimated at 49,981 tons. Yards report that handling is slow and expensive because of the variety of the scrap, with labor shortage adding to the problem.

IRON AND STEEL (OTHER THAN RAILROAD) SCRAP

(All Prices Are Per Gross Ton)

	BASIC OPEN HEARTH GRADES (No. 1 Heavy Melting; No. 1 Hydr. Compressed Black Sheets; No. 2 Heavy Melting; Dealers' No. 1 Bundles; Dealers' No. 2 Bundles; No. 1 Busheling)	BASIC OPEN HEARTH GRADES (Machine Shop Turnings)	BLAST FURNACE GRADES (Mixed Borings and Turnings; Shovelling Turnings; No. 2 Busheling; Cast Iron Borings)	ELECTRIC FURNACE, ACID OPEN HEARTH AND FOUNDRY GRADES — Low Phos. (Billet, Bloom, Forge Crops)	Low Phos. (Bar Crops, Punchings Plate Scrap and Cast Steel)	Heavy Structural and Plate (3 ft. and Under)	Heavy Structural and Plate (2 ft. and Under)	Heavy Structural and Plate (1 ft. and Under)	Cut Auto. Steel Scrap (3 ft. and Under)	Cut Auto. Steel Scrap (2 ft. and Under)	Cut Auto. Steel Scrap (1 ft. and Under and Auto, Springs, and Crankshafts)	Alloy free Low Phos. and Sulphur Turnings	Heavy Axle and Forge Turn. First Cut	Electric Furnace Bundles
Pittsburgh, Brackenridge, Butler, Monessen, Midland, Johnstown, Sharon, Canton, Steubenville, Warren, Youngstown, Weirton	$20.00	$16.00	$16.00	$25.00	$22.50	$21.00	$21.50	$22.00	$20.00	$20.50	$21.00	$18.00	$19.50	$21.00
Cleveland, Middletown, Cincinnati, Portsmouth	19.50	15.50	15.50	24.50	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50
Chicago, Claymont, Coatesville, Conshohocken, Harrisburg, Phoenixville, Sparrows Pt.	18.75	14.75	14.75	23.75	21.25	19.75	20.25	20.75	18.75	19.25	19.75	16.75	18.25	19.75
Ashland, Ky.	19.50	15.50	15.50	24.50	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50
Buffalo, N. Y.	19.25	15.25	15.25	24.25	21.75	20.25	20.75	21.25	19.25	19.75	20.25	17.25	18.75	20.25
Bethlehem, Pa.; Kokomo, Ind.	18.25	14.25	14.25	23.25	20.75	19.25	19.75	20.25	18.25	18.75	19.25	16.25	17.75	19.25
Duluth, Minn.	18.00	14.00	14.00	23.00	20.50	19.00	19.50	20.00	18.00	18.50	19.00	16.00	17.50	19.00
Detroit, Mich.	17.85	13.85	13.85	22.85	20.35	18.85	19.35	19.85	17.85	18.35	18.85	15.85	17.35	18.85
Toledo, Ohio		13.85	13.85											
St. Louis, Mo.	17.50	13.50	13.50	22.50	20.00	18.50	19.00	19.50	17.50	18.00	18.50	15.50	17.00	18.50
Atlanta, Ga.; Alabama City, Ala.; Birmingham, Los Angeles; Pittsburg, Cal.; San Francisco	17.00	13.00	13.00	22.00	19.50	18.00	18.50	19.00	17.00	17.50	18.00	15.00	16.50	18.00
Minnequa, Colo.	16.50	12.50	12.50	21.50	19.00	17.50	18.00	18.50	16.50	17.00	17.50	14.50	16.00	17.50
Seattle, Wash.	14.50	10.50	10.50	19.50	17.00	15.50	16.00	16.50	14.50	15.00	15.50	12.50	14.00	15.50

BUNDLES: Tin can bundles are $4 below dealers' No. 2 bundles; No. 3 bundles are $2 less than No. 1 heavy melting.

SWITCHING CHARGES: Deductions for shipping points within basing points (cents per gross ton) are: Pittsburgh, Brackenridge, 55c.; Midland, Johnstown, Sharon, Youngstown, Warren, Weirton, Cleveland, Toledo, Los Angeles, San Francisco, 42c.; Butler, Monessen, Canton, Steubenville, Cincinnati*, Portsmouth, Ashland, Coatesville, Harrisburg, Phoenixville, Bethlehem, Kokomo, Duluth, St. Louis, 28c.; Buffalo, Claymont, 36c.; Conshohocken, 11c.; Atlanta, Birmingham, 32c.; Pittsburg, Cal., 42c.; Middletown, 14c.; Sparrow's Point, 11c.; Chicago, 84c.; Detroit, 53c.; Alabama City, 26c.; Minnequa, 22c.; Seattle, 38c.. *At Cincinnati, for basic open hearth grades, cut auto scrap and auto springs and crankshafts, deduct 80c. per ton.

PITTSBURGH basing point includes switching districts of Bessemer, Homestead, Duquesne, Munhall and McKeesport. Cincinnati basing point includes Newport, Ky., switching district. St. Louis includes switching districts of Granite City, East St. Louis, Madison, Ill. San Francisco includes switching districts of S. San Francisco, Niles and Oakland, Cal.

MAXIMUM prices of inferior grades shall continue to bear same differential below corresponding grades as existed during the period Sept. 1, 1940, to Jan. 31, 1941. Superior grades cannot be sold at a premium without approval of OPA. Special preparation charges in excess of the above prices are banned. Whenever any electric furnace or foundry grades are purchased for open hearth or blast furnace use, prices may not exceed the prices above for the corresponding open hearth grades.

MAXIMUM SHIPPING POINT PRICE—Where shipment is by rail or vessel, or by combination of rail and vessel, the scrap is at its shipping point when placed f.o.b. railroad car or f.a.s. vessel. In such cases, the maximum shipping point prices shall be: (a) For shipping points located within a basing point, the price listed in the table above for the scrap at the basing point in which the shipping point is located, minus the lowest established switching charge for scrap within the basing point and (b) for shipping points located outside the basing point, the price in table above at the most favorable basing point minus the lowest transportation charge by rail or water or combination thereof. Dock charge is 75c. a ton*, but 50c. if moved by deck scow or railroad lighter. Shipping by motor vehicle: The scrap is at its shipping point when loaded. For shipping points located within basing points take price listed in table minus applicable switching charge. If located outside a basing point, the price at the most favorable basing point minus lowest established charge for transporting by common carrier. If no established transportation rate exists, the customary costs are deducted. Published dock charges prevail. If unpublished include 75c.* For exceptions see official order.

AT NEW YORK city or Brooklyn, the maximum shipping point price is $15.33 for No. 1 heavy melting, f.o.b. cars, f.a.s. vessel or loaded on truck. Other grades carry differentials similar to those in table. New Jersey prices must be computed on basis of all-rail. At Boston the maximum is $15.05 for No. 1 f.o.b. cars, f.a.s. vessel or loaded on trucks. Shipments from a New England shipping point to a consumer outside New England carry maximum transportation charge of $6.65 per ton.

UNPREPARED SCRAP: For unprepared scrap, maximum prices shall be $2.50 (and in the case of the material from which No. 1, No. 2, and No. 3 bundles are made $4) less the maximum prices for the corresponding grade or grades of prepared scrap. In no case, however,

Note—Revisions announced Oct. 10 and effective Oct. 15 (turn to page 117), have not been made on this page.

shall electric furnace and foundry grades be used as the "corresponding grade or grades of prepared scrap." Converter may charge $2.50 per ton on consumer-owned unprepared remote scrap (see order).

Maximum price of all scrap in a vehicle is that of the lowest price grade in the shipment. This limitation does not apply to vessel shipments if grades are segregated.

Where scrap is to undergo preparation prior to its arrival at the point of delivery, such scrap is not at its shipping point, as that phrase is defined above, until after preparation has been completed.

CHEMICAL BORINGS: No. 1 (new, clean, containing not more than 1 per cent oil), $1 less than No. 1 heavy melting; No. 2 (new, clean, containing not more than 1.5 per cent oil), $2 less than No. 1 heavy melting. If loaded in box cars add 75c.

UNPREPARED CAST IRON SCRAP—Except for heavy breakable cast, unprepared scrap is given a price ceiling of $2.50 per ton less than the maximum prices for the corresponding grade of prepared cast iron scrap. Where scrap is to undergo preparation prior to arrival at the point of delivery, such scrap is not considered at shipping point until preparation is completed.

Consumers of cast scrap may pay the shipping point price plus established charge for transporting the scrap to their plants. In the case of deliveries by truck, the cast scrap buyer must obtain from the seller a certification, made out to OPA.

*At Memphis 50c.; Great Lakes ports $1; New England $1.25.

RAILROAD SCRAP

	No. 1 RR Heavy Melting	Scrap Rails	Rails for Rerolling	Scrap Rails: 3 ft. and Under	Scrap Rails: 2 ft. and Under	Scrap Rails: 18 in. and Under
Cleveland, Cincinnati, Ashland, Portsmouth, Middletown	$20.50	$21.50	$23.00	$23.50	$23.75	$24.00
Canton, Pittsburgh, Sharon, Steubenville, Wheeling, Youngstown	21.00	22.00	23.50	24.00	24.25	24.50
Chicago, Philadelphia, Sparrows Pt., Wilmington,	19.75	20.75	22.25	22.75	23.00	23.25
Birmingham, Los Angeles, San Francisco	18.00	19.00	20.50	21.00	21.25	21.50
Buffalo	20.25	21.25	22.75	23.25	23.50	23.75
Detroit	18.85	19.85	21.35	21.85	22.10	22.35
Duluth	19.00	20.00	21.50	22.00	22.25	22.50
Kansas City, Mo.	17.00	18.00	19.50	20.00	20.25	20.50
Kokomo, Ind.	19.25	20.25	21.75	22.25	22.50	22.75
Seattle	15.50	16.50	18.00	16.50	18.75	19.00
St. Louis	18.50	19.50	21.00	21.50	21.75	22.00

CAST IRON SCRAP

	Group A	Group B	Group C
No. 1 cupola cast	$18.00	$19.00	$20.00
No. 1 machinery cast, drop broken, 150 lbs. and under	18.00	19.00	20.00
Clean auto cast	18.00	19.00	20.00
Unstripped motor blocks	17.50	18.50	19.50
Stove Plate	17.00	18.00	19.00
Heavy Breakable Cast	15.50	16.50	17.50
Charging box size cast	17.00	18.00	19.00
Misc. Malleable	20.00	21.00	22.00

Group A includes the states of Montana, Idaho, Wyoming, Nevada, Utah, Arizona and New Mexico.

Group B includes the states of North Dakota, South Dakota, Nebraska, Colorado, Kansas Oklahoma, Texas and Florida.

Group C: States not named in A and B; switch district of Kansas City, Kan., Mo.

. . . Composite Prices

Advances Over Past Week in **Heavy Type**; Declines in *Italics*. (Prices Are F.O.B. Major Basing Points)

Flat Rolled Steel: (Cents Per Lb.)	Oct. 13, 1942	Oct. 6, 1942	Sept. 15, 1942	Oct. 14, 1941
Hot rolled sheets	2.10	2.10	2.10	2.10
Cold rolled sheets	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.50	3.50	3.50	3.50
Hot rolled strip	2.10	2.10	2.10	2.10
Cold rolled strip	2.80	2.80	2.80	2.80
Plates	2.10	2.10	2.10	2.10
Stain's c.r. strip (No. 302)	28.00	28.00	28.00	28.00
Tin and Terne Plate: (Dollars Per Base Box)				
Tin plate	$5.00	$5.00	$5.00	$5.00
Special coated mfg. ternes	4.30	4.30	4.30	4.30
Bars and Shapes: (Cents Per Lb.)				
Merchant bars	2.15	2.15	2.15	2.15
Cold finished bars	2.65	2.65	2.65	2.65
Alloy bars	2.70	2.70	2.70	2.70
Structural shapes	2.10	2.10	2.10	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00
Wire and Wire Products: (Cents Per Lb.)				
Plain wire	2.60	2.60	2.60	2.60
Wire nails	2.55	2.55	2.55	2.55
Rails: (Dollars Per Gross Ton)				
Heavy rails	$40.00	$40.00	$40.00	$40.00
Light rails	40.00	40.00	40.00	40.00
Semi-Finished Steel: (Dollars Per Gross Ton)				
Rerolling billets	$34.00	$34.00	$34.00	$34.00
Sheet bars	34.00	34.00	34.00	34.00
Slabs	34.00	34.00	34.00	34.00
Forging billets	40.00	40.00	40.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00
Wire Rods and Skelp: (Cents Per Lb.)				
Wire rods	2.00	2.00	2.00	2.00
Skelp (grvd)	1.90	1.90	1.90	1.90

Pig Iron: (Per Gross Ton)	Oct. 13, 1942	Oct. 6, 1942	Sept. 15, 1942	Oct. 14, 1941
No. 2 fdy., Philadelphia	$25.89	$25.89	$25.89	$25.84
No. 2, Valley furnace	24.00	24.00	24.00	24.00
No. 2, Southern Cin'ti	24.68	24.68	24.68	24.06
No. 2, Birmingham	20.38	20.38	20.38	20.38
No. 2, foundry, Chicago†	24.00	24.00	24.00	24.00
Basic, del'd eastern Pa.	25.39	25.39	25.39	25.34
Basic, Valley furnace	23.50	23.50	23.50	23.50
Malleable, Chicago†	24.00	24.00	24.00	24.00
Malleable, Valley	24.00	24.00	24.00	24.00
L. S. charcoal, Chicago	31.34	31.34	31.34	31.34
Ferromanganese‡	135.00	135.00	135.00	120.00

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton.
‡For carlots at seaboard.

Scrap: (Per Gross Ton)				
Heavy melting steel, P'gh.	$20.00	$20.00	$20.00	$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.85	17.85	17.85	17.85
Low phos. plate, Youngs'n	22.50	22.50	22.50	23.00
No. 1 cast, Pittsburgh	20.00	20.00	20.00	22.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	24.00
No. 1 cast, Ch'go	20.00	20.00	20.00	20.00
Coke, Connellsville: (Per Net Ton at Oven)				
Furnace coke, prompt	$6.00	$6.00	$6.00	$6.125
Foundry coke, prompt	6.875	6.875	6.875	6.875
Non-Ferrous Metals: (Cents per Lb. to Large Buyers)				
Copper, electro., Conn.	12.00	12.00	12.00	12.00
Copper, Lake, New York	12.00	12.00	12.00	12.00
Tin (Straits), New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis	8.25	8.25	8.25	8.25
Lead, St. Louis	6.35	6.35	6.35	5.70
Antimony (Asiatic), N. Y.	16.50	16.50	16.50	16.50

The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 118 to 126 herein.

. . . Comparison of Prices

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Oct. 13, 1942	2.30467c. a Lb.	23.61 a Gross Ton	$19.17 a Gross Ton
One week ago	2.30467c. a Lb.	23.61 a Gross Ton	$19.17 a Gross Ton
One month ago	2.30467c. a Lb.	23.61 a Gross Ton	$19.17 a Gross Ton
One year ago	2.30467c. a Lb.	23.61 a Gross Ton	$19.17 a Gross Ton

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1942	2.30467c.,	2.30467c.,	$23.61	$23.61	$19.17	$19.17
1941	2.30467c.,	2.30467c.,	$23.61, Mar. 20	$23.45, Jan. 2	$22.00, Jan. 7	$19.17, Apr. 10
1940	2.30467c., Jan. 2	2.24107c., Apr. 16	23.45, Dec. 23	22.61, Jan. 2	21.83, Dec. 30	16.04, Apr. 9
1939	2.35367c., Jan. 3	2.26689c., May 16	22.61, Sept. 19	20.61, Sept. 12	22.50, Oct. 3	14.08, May 16
1938	2.58414c., Jan. 4	2.27207c., Oct. 18	23.25, June 21	19.61, July 6	15.00, Nov. 22	11.00, June 7
1937	2.58414c., Mar. 9	2.32263c., Jan. 4	23.25, Mar. 9	20.25, Feb. 16	21.92, Mar. 30	12.92, Nov. 10
1936	2.32263c., Dec. 28	2.05200c., Mar. 10	19.74, Nov. 24	18.73, Aug. 11	17.75, Dec. 21	12.67, June 9
1935	2.07642c., Oct. 1	2.06492c., Jan. 8	18.84, Nov. 5	17.83, May 14	13.42, Dec. 10	10.33, Apr. 29
1934	2.15367c., Apr. 24	1.95757c., Jan. 2	17.90, May 1	16.90, Jan. 27	13.00, Mar. 13	9.50, Sept. 25
1933	1.95578c., Oct. 3	1.75836c., May 2	16.90, Dec. 5	13.56, Jan. 3	12.25, Aug. 8	6.75, Jan. 3
1932	1.89196c., July 5	1.83901c., Mar. 1	14.81, Jan. 5	13.56, Dec. 6	8.50, Jan. 12	6.43, July 5
1931	1.99629c., Jan. 13	1.86586c., Dec. 29	15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6	8.50, Dec. 29
1930	2.25488c., Jan. 7	1.97319c., Dec. 9	18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18	11.25, Dec. 9
1929	2.31773c., May 28	2.26498c., Oct. 29	18.71, May 14	18.21, Dec. 17	17.58, Jan. 29	14.08, Dec. 3

Weighted index based on steel bars, beams, tank plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 per cent of the United States output. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Prices of Finished Iron and Steel . . .

Steel prices shown here are f.o.b. basing points, in cents per lb., unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases freight absorbed to meet competition.

Basing Point → / Product ↓	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio	Gulf Ports, Cars	Pacific Ports, Cars[10]	DELIVERED TO Detroit	New York	Philadelphia
SHEETS															
Hot rolled	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.20¢	2.10¢		2.65¢	2.22¢	2.35¢	2.28¢
Cold rolled[1]	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.17¢	3.41¢	3.39¢
Galvanized (24 ga.)	3.50¢	3.50¢	3.50¢		3.50¢	3.50¢	3.50¢	3.50¢	3.60¢	3.50¢		4.05¢		3.75¢	3.68¢
Enameling (20 ga.)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.47¢	3.73¢	3.69¢
Long ternes[2]	3.80¢		3.80¢									4.55¢		4.18¢	4.14¢
STRIP															
Hot rolled[3]	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.22¢	2.48¢	
Cold rolled[4]	2.80¢	2.90¢		2.80¢			2.80¢	(Worcester = 3.00¢)					2.92¢	3.18¢	
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.58¢	
Commodity C-R	2.95¢			2.95¢			2.95¢	(Worcester = 3.35¢)					3.07¢	3.33¢	
TIN PLATE															
Standard cokes, base box	$5.00	$5.00	$5.00						$5.10					5.38¢	5.34¢
BLACK PLATE															
29 gage[5]	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢[13]			3.39¢
TERNES, M'FG															
Special coated, base box	$4.30	$4.30	$4.30						$4.40						
BARS															
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢		(Duluth = 2.25¢)			2.52¢	2.80¢	2.27¢	2.51¢	2.49¢
Rail steel[6]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢					2.52¢	2.80¢			
Reinforcing (billet)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.52¢	2.55¢[14]	2.27¢	2.40¢	
Reinforcing (rail)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢				2.52¢	2.55¢[14]	2.27¢		2.49¢
Cold finished[8]	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢			(Detroit = 2.70¢)					3.01¢	2.99¢
Alloy, hot rolled	2.70¢	2.70¢				2.70¢		(Bethlehem, Massilon, Canton = 2.70¢)					2.82¢		
Alloy, cold drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.47¢		
PLATES								(Coatesville and Claymont = 2.10¢)							
Carbon steel	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	2.25¢[11]		2.47¢	2.65¢	2.33¢	2.30¢	2.155¢
Wrought iron	3.80¢														
Floor plates	3.35¢	3.35¢									3.72¢	4.00¢		3.73¢	3.69¢
Alloy	3.50¢	3.50¢			(Coatesville = 3.50¢)						3.97¢	4.15¢		3.71¢	3.60¢
SHAPES															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢		(Bethlehem = 2.10¢)			2.47¢	2.75¢		2.28¢	2.22¢
SPRING STEEL, C-R															
0.26 to 0.50 Carbon	2.80¢			2.80¢			(Worcester = 3.00¢)								
0.51 to 0.75 Carbon	4.30¢			4.30¢			(Worcester = 4.50¢)								
0.76 to 1.00 Carbon	6.15¢			6.15¢			(Worcester = 6.35¢)								
1.01 to 1.25 Carbon	8.35¢			8.35¢			(Worcester = 8.55¢)								
WIRE[9]															
Bright[15]	2.60¢	2.60¢		2.60¢	2.60¢		(Worcester = 2.70¢)					3.10¢			2.94¢
Galvanized	add proper size extra and galvanized extra to bright wire base, above.														
Spring (High Carbon)	3.20¢	3.20¢		3.20¢			(Worcester = 3.30¢)					3.70¢			3.54¢
PILING															
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.74¢
IRON BARS[12]															
Wrought single refined	4.40¢														
Wrought double refined	5.40¢														

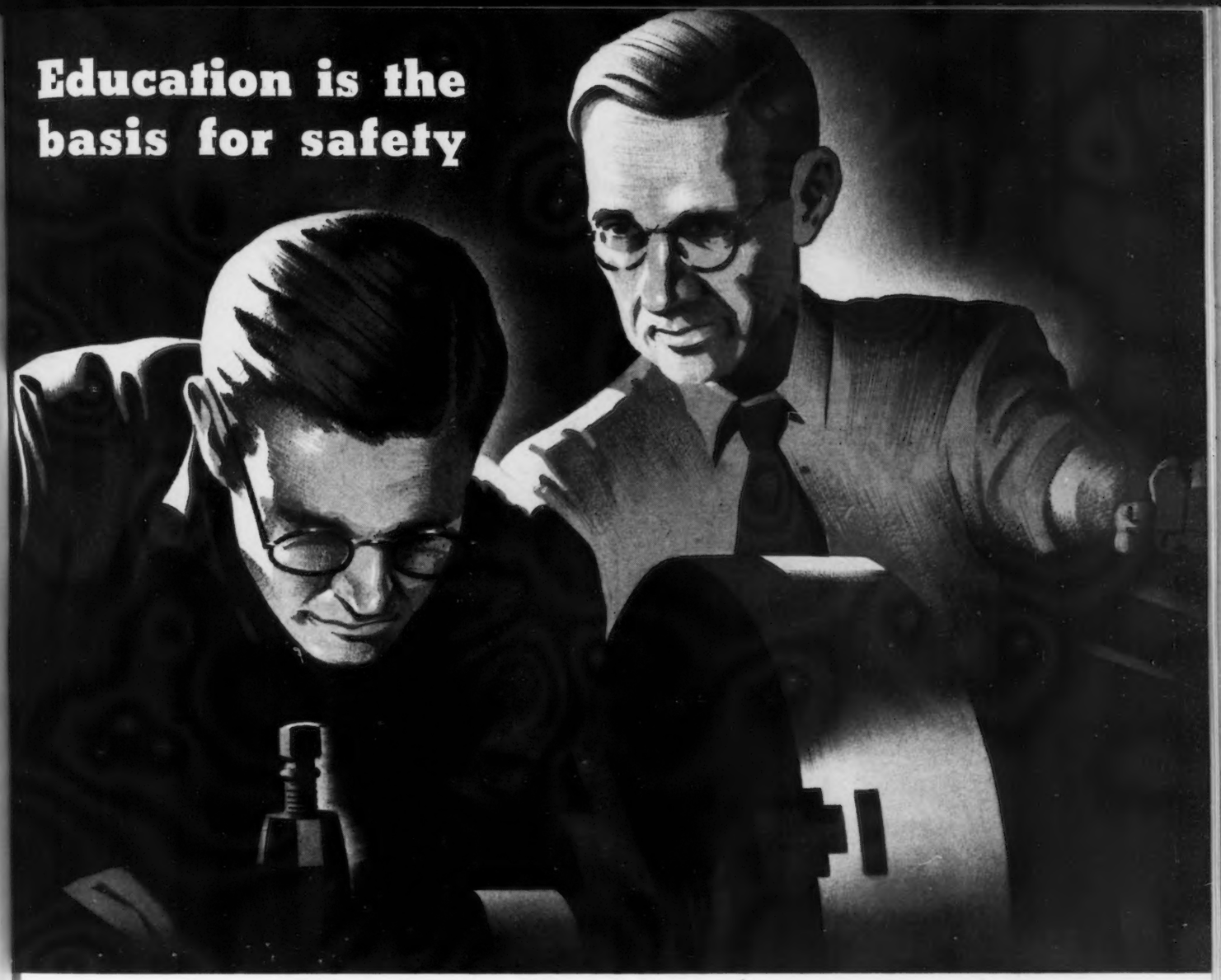
[1] Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base. [2] Unassorted 8-lb. coating. [3] Widths up to 12 in. [4] Carbon 0.25 per cent and less. [5] Applies to certain width and length limitations. [6] For merchant trade. [7] Prices for straight length material only, from a producer to a consumer. Functional discount of 25c. per 100 lb. to fabricators. [8] Also shafting. For quantities of 20,000 to 39,999 lb. [9] Carload lot to manufacturing trade. [10] These prices do not apply if the customary means of transportation (rail and water) are not used. [11] Ship plates only. [12] Common iron bars quoted at 2.15c. by Terre Haute, Ind., producer. [13] Boxed. [14] Portland and Seattle price, San Francisco price is 2.50c. [15] This bright wire base price to be used in figuring annealed and bright finish wires, commercial spring wire and galvanized wire.

GOVERNMENT CEILINGS—Price Schedule No. 6 issued April 16, 1941, governs steel mill prices; Price Schedule No. 49 governs warehouse prices, which are on another page of this issue.

EXCEPTIONS TO PRICE SCHEDULE NO. 6—On hot rolled carbon bars, Phoenix Iron Co. may quote 2.35c. at established basing points; Calumet Steel division of Borg Warner may quote 2.35c., Chicago, on bars from its 8-in. mill; Joslyn Mfg. Co. may quote 2.35c., Chicago base. On rail steel bars Sweets Steel Co. may quote 2.33c., f.o.b. mill. On hot rolled sheets, Andrews Steel Co. may quote for shipment to Detroit area on Middletown base. On galvanized sheets, Andrews Steel may quote 3.75c. at established basing points. On hot rolled strip, Joslyn Mfg. Co. may quote 2.30c., Chicago base. On plates, Granite City Steel Co. may quote 2.35c., f.o.b. mill, and Central Iron & Steel Co. may quote 2.20c., f.o.b. basing points. On shapes, Phoenix Iron Co. may quote 2.30c. established basing points and 2.50c. Phoenixville for export.

On rail steel merchant bars, Eckels-Nye Corp. may charge 2.40c. On tubing, South Chester Tube Co. may price Gulf or Pacific Coast all-rail shipments and shipments west of Harrisburg on basis of f.o.b. Chester. On lend-lease sales to eastern seaboard, Sheffield Steel Co. and Colorado Fuel & Iron Corp. may sell f.o.b. mill. SEMIFINISHED STEEL—Follansbee Steel Corp. may sell forging billets at $49.50 f.o.b. Toronto; Continental Steel Corp. may sell Acme Steel Co. at $34 for rerolling billets plus extras and freight; Ford Motor Co. may sell rerolling billets at $34 f.o.b. Dearborn; Andrews Steel Co. may sell forging billets at $50 at established basing points and slabs at $41; Empire Sheet and Tin Plate may sell slabs at $41 at established basing points and sheet bars at $39 f.o.b. mill; on lend-lease sales Northwestern Steel & Wire Co. may charge $41 per gross ton f.o.b. mill for rerolling billets; on lend-lease sales Wheeling Steel Corp. may charge $36 per ton for small billets, f.o.b. Portsmouth and $37 per ton for sheet bars f.o.b. Portsmouth; Laclede Steel Co. on semifinished sales for lend-lease shipped to eastern seaboard may use Chicago basing point prices f.o.b. Alton and Madison, Ill. ALLOY STEEL BARS—Texas Steel Co. may use Chicago base f.o.b. Worth Worth.

Education is the basis for safety



Information supplied by the National Safety Council

Labor, particularly inexperienced labor, cannot be expected to recognize the full penalties of carelessness in the shop. Management has assumed the responsibility of supervising safety measures, and has cooperated in establishing sound safety rules.

Nevertheless, the large increase in labor personnel due to war needs, plus the influx of inexperienced men, have resulted in a substantial increase in lost time accidents.

Even assuming that the obvious safety measures with regard to operating machinery, electrical equipment and shop traffic have been installed, two factors — education and eternal vigilance — determine the real effectiveness of any safety program.

Both are the responsibility of the supervisory staff, from foremen up. The foreman who does a thorough job of educating his particular group in safety rules and cooperative enforcement has done much to cut down accidents. Management that takes an active interest in both safety education and the enforcement of safety measures has taken a great step forward in reducing wastage of irreplaceable production time.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Mo-lyb-den-um Company
500 Fifth Avenue • New York City

MOLY

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (rerolling only). Prices delivered Detroit are $2.25 higher; f.o.b. Duluth, billets only, $2 higher.

	Per Gross Ton
Rerolling	$34.00
Forging quality	40.00

Shell Steel

	Per Gross Ton
3 in. to 12 in.	$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Basic open hearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.

Prices delivered Detroit are $2.25 higher.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity.

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

	Per Gross Ton
Open hearth or bessemer	$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

	Per Lb.
Grooved, universal and sheared	1.90c.

Wire Rods

(No. 5 to 9/32 in.)

	Per Lb.
Pittsburgh, Chicago, Cleveland	2.00c.
Worcester, Mass.	2.10c.
Birmingham	2.00c.
San Francisco	2.50c.
Galveston	2.25c.

9/32 in. to 47/64 in., 0.15c. a lb. higher. Quantity extras apply.

Alloy Steel Blooms, Billets and Slabs

Pittsburgh, Chicago, Canton, Massillon, Buffalo, or Bethlehem, per gross ton	$54.00

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse)

	Base per Lb.
High speed	67c.
Straight molybdenum	54c.
Tungsten-molybdenum	57½c.
High-carbon-chromium	43c.
Oil hardening	24c.
Special carbon	22c.
Extra carbon	18c.
Regular carbon	14c.

Warehouse prices east of Mississippi are 2c. a lb. higher; west of Mississippi, 3c. higher.

CORROSION AND HEAT-RESISTING STEEL

(Per lb. base price, f.o.b. Pittsburgh)

Chromium-Nickel Alloys

	No. 304	No. 302
Forging billets	21.25c.	20.40c.
Bars	25.00c.	24.00c.
Plates	29.00c.	27.00c.
Structural shapes	25.00c.	24.00c.
Sheets	36.00c.	34.00c.
Hot rolled strip	23.50c.	21.50c.
Cold rolled strip	30.00c.	28.00c.
Drawn wire	25.00c.	24.00c.

Straight-Chromium Alloys

	No. 410	No. 430	No. 442	No. 446
F.Billets	15.725c.	16.15c.	19.125c.	23.375c.
Bars	18.50c.	19.00c.	22.50c.	27.50c.
Plates	21.50c.	22.00c.	25.50c.	30.50c.
Sheets	26.50c.	29.00c.	32.50c.	36.50c.
Hotstrip	17.00c.	17.50c.	24.00c.	35.00c.
Cold st.	22.00c.	22.50c.	32.00c.	52.00c.

Chromium-Nickel Clad Steel (20%)

	No. 304
Plates	18.00c.*
Sheets	19.00c.

*Includes annealing and pickling.

PIG IRON

All prices set in bold face type are maxima established by OPA on June 24, 1941. Other domestic prices (in italics) are delivered quotations per gross ton computed on the basis of the official maxima.

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phosphorus	Charcoal
Boston††	*$25.53*	*$25.03*	*$26.53*	*$26.03*		
Brooklyn	*27.65*			*28.15*		
Jersey City	*26.62*	*26.12*	*27.62*	*27.12*		
Philadelphia	*25.89*	*25.39*	*26.89*	*26.39*		
Bethlehem, Pa.	$25.00	$24.50	$26.00	$25.50		
Everett, Mass.††	25.00	24.50	26.00	25.50		
Swedeland, Pa.	25.00	24.50	26.00	25.50		
Steelton, Pa.		24.50			$29.50	
Birdsboro, Pa.	25.00	24.50	26.00	25.50	29.50	
Sparrows Point, Md.	25.00	24.50				
Erie, Pa.	24.00	23.50	25.00	24.50		
Neville Island, Pa.	24.00	23.50	24.50	24.00		
Sharpsville, Pa.*	24.00	23.50	24.50	24.00		
Buffalo	24.00	23.00	25.00	24.50	29.50	
Cincinnati	*24.68*	*24.68*		*25.18*		
Canton, Ohio	*25.47*	*24.97*	*25.97*	*25.47*		
Mansfield, Ohio	*26.06*	*25.56*	*26.56*	*26.06*		
St. Louis	*24.50*	*24.00*				
Chicago	24.00	23.50	24.50	24.00		*$31.34*
Granite City, Ill.	24.00	23.50	24.50	24.00		
Cleveland	24.00	23.50	24.50	24.00		
Hamilton, Ohio	24.00	23.50		24.00		
Toledo	24.00	23.50	24.50	24.00		
Youngstown*	24.00	23.50	24.50	24.00		
Detroit	24.00	23.50	24.50	24.00		
Lake Superior fc.						$28.00
Lyles, Tenn. fc.†						33.00
St. Paul	*26.76*		*27.26*	*26.76*		
Duluth	24.50		25.00	24.50		
Birmingham	20.38	19.00	25.00			
Los Angeles	*27.25*					
San Francisco	*27.25*					
Seattle	*27.25*					
Provo, Utah	22.00					
Montreal	*27.50*	*27.50*		*28.00*		
Toronto	*25.50*	*25.50*		*26.00*		

GRAY FORGE IRON: Valley or Pittsburgh furnace $23.50

*Pittsburgh Coke & Iron Co. (Sharpsville, Pa. furnace only) and the Struthers Iron and Steel Co., Struthers, Ohio, may charge 50c. a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

**Pittsburgh Ferromanganese Co. (Chester furnace only) may charge $2.25 a ton over maximum basing point prices.

†Price shown is for low-phosphorous iron; high-phosphorous sells for $28.50 at the furnace.

††Eastern Gas & Fuel Associates, Boston, is permitted to sell pig iron produced by its selling company, Mystic Iron Works, Everett, Mass., at $1 per gross ton above maximum prices.

Switching Charges: Basing point prices are subject to an additional charge for delivery within the switching limits of the respective districts.

Silicon Differentials: Basing point prices are subject to an additional charge not to exceed 50c a ton for each 0.25 per cent silicon content in excess of base grade (1.75 per cent to 2.25 per cent)

Phosphorous Differential: Basing point prices are subject to a reduction of 38c. per ton for phosphorous content of 0.70 per cent and over.

Manganese Differentials: Basing point prices are subject to an additional charge not to exceed 50c. a ton for each 0.50 per cent manganese content in excess of 1.00 per cent.

NATIONAL EMERGENCY STEELS (Hot Rolled)

Extras for Alloy Content

Designation	CHEMICAL COMPOSITION LIMITS, PER CENT									Basic Open-Hearth		Electric Furnace	
	Carbon	Manganese	Phosphorus Max.	Sulphur Max.	Silicon	Nickel	Chromium	Molybdenum	Vanadium	Bars & Bar-Strip	Billets, Blooms, & Slabs	Bars & Bar-Strip	Billets, Blooms, & Slabs
NE 8024	.22/.28	1.00/1.30	.040	.040	.20/.35			.10/.20		.45c	$ 9.00	.95c	$19.00
NE 8124	.22/.28	1.30/1.60	.040	.040	.20/.35			.25/.35		.85	17.00	1.35	27.00
NE 8233	.30/.36	1.30/1.60	.040	.040	.20/.35			.10/.20		.65	13.00	1.15	23.00
NE 8245	.42/.49	1.30/1.60	.040	.040	.20/.35			.10/.20		.65	13.00	1.15	23.00
NE 8339	.35/.42	1.30/1.60	.040	.040	.20/.35			.20/.30		.75	15.00	1.25	25.00
NE 8442	.38/.45	1.30/1.60	.040	.040	.20/.35			.30/.40		.90	18.00	1.40	28.00
NE 8447	.43/.50	1.30/1.60	.040	.040	.20/.35			.30/.40		.90	18.00	1.40	28.00
NE 8547	.43/.50	1.30/1.60	.040	.040	.20/.35			.40/.60		1.25	25.00	1.75	35.00
NE 8620	.18/.23	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.15/.25		.75	15.00	1.25	25.00
NE 8630	.27/.33	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.15/.25		.75	15.00	1.25	25.00
NE 8724	.22/.28	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00	1.30	26.00
NE 8739	.35/.42	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00	1.30	26.00
NE 8744	.40/.47	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00	1.30	26.00
NE 8749	.45/.52	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00	1.30	26.00
NE 8817	.15/.20	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.30/.40		.90	18.00	1.40	28.00
NE 8949	.45/.52	1.00/1.30	.040	.040	.20/.35	.40/.60	.40/.60	.30/.40		1.20	24.00	1.70	34.00

Note: The extras shown above are in addition to a base price of 2.70c per 100 lb., on finished products and $54. per gross ton on semi-finished steel major basing points and are in cents per 100 lb. and dollars per gross ton in semi-finished.

Cleaner Air FOR GREATER EFFICIENCY

NEWCOMB-DETROIT UNI-WASH DUST COLLECTORS

Dust, fumes and vapors in the air can slow production. Keep the air in *your* plant clean by installing Newcomb-Detroit Uni-Wash Dust Collectors.

Their quality and effectiveness have been tried and proved in actual operation in the plants of many leading manufacturers.

For more than a quarter-century, Newcomb-Detroit has been known for its advanced designs in industrial sheet metal equipment. These modern, efficient dust collectors come to you with the backing of this long and successful experience.

Uni-Wash Dust Collectors are notable for low initial cost, minimum operating and upkeep expense. They are shipped to you completely assembled, ready for immediate installation. And they are guaranteed for a year against defects. in material or workmanship.

NEWCOMB-DETROIT PAINT SPRAY BOOTHS

Important to the most efficient spray application of prime, surfacer, lacquer, synthetic enamels and other finishing materials . . . Providing the utmost in healthful, fume-free working conditions . . . Reducing fire hazard to a minimum, conforming to underwriters' specifications . . . Used by leading industries in many different fields.

Write for illustrated descriptive booklet.

NEWCOMB-DETROIT COMPANY, INC.

5741 RUSSELL STREET *Established 1912* **DETROIT, MICHIGAN**

Dust Collectors • Paint Spray Booths • Drying Ovens • Metal Parts Washers and Rust Proofing Systems • Exhaust and Ventilating Systems • Other Sheet Metal Equipment

ELECTRICAL SHEETS

(Base, f.o.b. Pittsburgh)

	Per Lb.
Field grade	3.20c.
Armature	3.55c.
Electrical	4.05c.
Motor	4.95c.
Dynamo	5.65c.
Transformer 72	6.15c.
Transformer 65	7.15c.
Transformer 58	7.65c.
Transformer 52	8.45c.

F.o.b. Granite City, add 10c. per 100 lb. on field grade to and including dynamo. Pacific ports add 75c. per 100 lb. on all grades.

WIRE PRODUCTS

To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham

	Base per Keg
Standard wire nails	$2.55
Coated nails	2.55
Cutnails, carloads	3.85
	Base per 100 Lb.
Annealed fence wire	$3.05
Annealed galvanized fence wire	3.40
	Base Column
Woven wire fence*	67
Fence posts (carloads)	69
Single loop bale ties	59
Galvanized barbed wire†	70
Twisted barbless wire	70

*15½ gage and heavier. †On 80-rod spools in carload quantities.

ROOFING TERNE PLATE

(F.o.b. Pittsburgh, per Package of 112 Sheets)

	20x14 in.	20x28 in.
8-lb. coating I.C.	$6.00	$12.00
15-lb. coating I.C.	7.00	14.00
20-lb. coating I.C.	7.50	15.00
25-lb. coating I.C.	8.00	16.00
30-lb. coating I.C.	8.63	17.25
40-lb. coating I.C.	9.75	19.50

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent off List

Machine and Carriage Bolts:

½ in. & smaller x 6 in. & shorter	65½
9/16 & ⅝ in. x 6 in. & shorter	63½
¾ to 1 in. x 6 in. & shorter	61
1⅛ in. and larger, all length	59
All diameters over 6 in. long	59
Lag, all sizes	62
Plow bolts	65

Nuts, Cold Punched or Hot Pressed:

(Hexagon or Square)

½ in. and smaller	62
9/16 to 1 in. inclusive	59
1⅛ to 1½ in. inclusive	57
1⅝ in. and larger	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 per cent for full container quantities. There is an additional 5 per cent allowance for carload shipments.

Semi-Fin. Hexagon Nuts	U.S.S.	S.A.E.
7/16 in. and smaller	..	64
½ in. and smaller	62	
½ in. through 1 in.	..	60
9/16 to 1 in.	59	..
1⅛ in. through 1½ in.	57	58
1⅝ in. and larger	56	..

In full container lots, 10 per cent additional discount.

Stove bolts, packages, nuts loose	71 and 10
Stove bolts in packages, with nuts attached	71
Stove bolts in bulk	80

On stove bolts freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago, New York on lots of 200 lb. or over.

Large Rivets *(½ in. and larger)*

Base per 100 lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham $3.75

Small Rivets *(7/16 in. and smaller)*

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ..... 65 and 5

Cap and Set Screws *Per Cent Off List*

Upset full fin. hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	64
Upset set screws, cup and oval points	71
Milled studs	46
Flat head cap screws, listed sizes	36
Filister head cap, listed sizes	51

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

(F.o.b. Pittsburgh only on wrought pipe)

Base Price—$200 per Net Ton

Steel (Butt Weld)

	Black	Galv.
½ in.	63½	51
¾ in.	66½	55
1 to 3 in.	68½	57½

Wrought Iron (Butt Weld)

½ in.	24	3½
¾ in.	30	10
1 and 1¼ in.	34	16
1½ in.	38	18½
2 in.	37½	18

Steel (Lap Weld)

2 in.	61	49½
2½ and 3 in.	64	52½
3½ to 6 in.	66	54½

Wrought Iron (Lap Weld)

2 in.	30½	12
2½ to 3½ in.	31½	14½
4 in.	33½	18
4½ to 8 in.	32½	17

Steel (Butt, extra strong, plain ends)

	Black	Galv.
½ in.	61½	50½
¾ in.	65½	54½
1 to 3 in.	67	57

Wrought Iron (Same as Above)

½ in.	25	6
¾ in.	31	12
1 to 2 in.	38	19½

Steel (Lap, extra strong, plain ends)

2 in.	59	48½
2½ and 3 in.	63	52½
3½ to 6 in.	66½	56

Wrought Iron (Same as Above)

2 in.	33½	15½
2½ to 4 in.	39	22½
4½ to 6 in.	37½	21

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or $4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or $2 a ton higher on all butt weld.

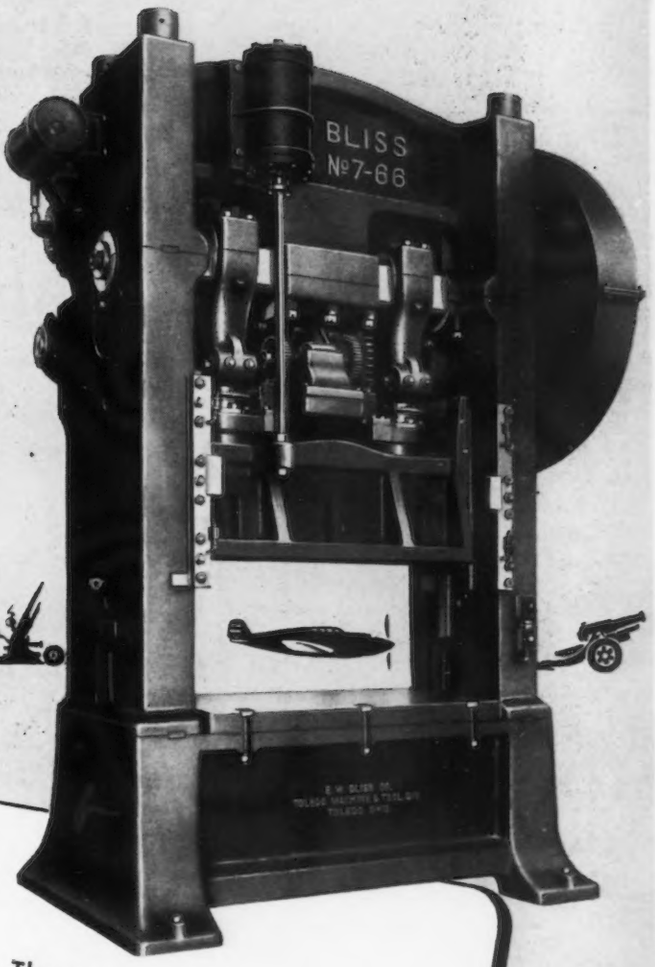
WAREHOUSE PRICES

(Delivered Metropolitan areas, per 100 lb. These prices do not necessarily apply for dislocated tonnage shipments when the f.o.b. City prices are used in conformance with OPA Schedule 49)

CITIES	SHEETS			STRIP		Plates (¼ in. and heavier)	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 ga.)	Cold Rolled	Galv. (24 ga.)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled 2300	Hot Rolled 3100	Cold Drawn 2300	Cold Drawn 3100
Pittsburgh	$3.35	....	$4.65	$3.60	$3.20	$3.40	$3.40	$3.35	$3.65	$7.45	$5.75	$8.40	$6.75
Chicago	3.25	4.10	4.85[1]	3.60	3.50	3.55	3.55	3.50	3.75	7.35	5.65	8.40	6.75
Cleveland	3.35	4.05	4.62	3.50	3.20	3.40	3.58	3.25	3.75	7.55	5.85	8.40	6.75
Philadelphia	3.55	4.05[5]	4.65	3.51	3.31	3.55	3.55	3.85	4.06	7.31	5.86	8.56	7.16
New York	3.58	4.60[2]	5.00	3.96[6]	3.51	3.76	3.75	3.84	4.09	7.60	5.90	8.84	7.19
Detroit	3.43	4.30	4.84[1]	3.68*	3.40	3.60	3.65	3.43	3.80	7.67	5.97	8.70	7.05
Buffalo	3.25	4.30[1]	4.75[4]	3.82	3.52	3.62	3.40	3.35	3.75	7.35	5.65	8.40	6.75
Boston	3.71	4.68	5.11	4.06	3.46	3.85	3.85	3.98	4.13	7.75	6.05	8.88	7.23
Birmingham	3.45[3]	....	4.75[1]	3.70[3]	....	3.55[3]	3.55[3]	3.50[3]	4.48	....	....	....	....
St. Louis	3.39	4.24[2]	4.99[1]	3.74	3.61	3.69	3.69	3.64	4.02	7.72	6.02	8.77	7.12
St. Paul	3.50	4.35	5.00	3.85	3.83	3.80	3.80	3.75	4.34	7.45	6.00	8.84	7.44
Milwaukee	3.38	4.23[2]	4.98[1]	3.73	3.54	3.68	3.68	3.63	3.88	7.58	5.88	8.63	6.98
Baltimore	3.50	....	5.05	4.00	....	3.70	3.70	3.85	4.04	....	....	....	....
Cincinnati	3.42	4.37[2]	4.42[1]	3.67	3.45	3.65	3.68	3.60	4.00	7.69	5.99	8.50	7.10
Norfolk	3.85	....	5.40	4.10	....	4.05	4.05	4.00	4.15	....	....	....	....
Washington	3.60	....	....	4.10	....	3.90	3.80	3.95	4.10	....	....	....	....
Indianapolis	3.45	4.25	5.01[1]	3.75	3.28	3.70	3.70	3.60	3.97	7.67	5.97	8.72	7.07
Omaha	3.85	....	5.52[1]	4.20	....	4.15	4.15	4.10	4.42	....	....	....	....
Memphis	3.85	....	5.25	4.10	....	3.95	3.95	3.90	4.31	....	....	....	....
New Orleans	4.05	....	....	4.30	....	3.90	3.90	4.10	4.60	....	....	....	....
Houston	4.00	....	....	4.30	....	4.05	4.05	3.75	....	....	....	....	....
Los Angeles†	4.95	7.15	5.95	4.90	....	4.90	4.60	4.35	6.60	9.55	8.55	10.55	9.55
San Francisco†	4.55	7.05	6.10	4.50	....	4.65	4.35	3.95	6.80	9.80	8.80	10.80	9.80
Seattle†	4.65[7]	....	5.70[7]	4.25	....	4.75	4.45	4.20	5.75	....	9.00	....	....

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shapes and hot rolled bars, 400 to 1999 lb., galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities; cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Exceptions: [1] 500 to 1499 lb. [2] 400 to 1499 lb. [3] 400 to 3999 lb. [4] 450 to 1499 lb. [5] 1000 to 1999 lb. [6] 0 to 1999 lb. [7] 300 to 10,000 lb. At Philadelphia galvanized sheets, 25 or more bundles; Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; San Francisco, hot rolled sheets, 400 to 39,999 lb., galvanized and cold rolled sheets, 750 to 4999 lb., cold fin. bars, 0-299 lb.; hot rolled alloy bars, 0-4999 lb.; Seattle, cold finished bars, 1000 lb. and over, hot rolled alloy bars, 0-1999 lb.; Memphis, hot rolled sheets, 400 to 1999 lb., galvanized sheets, 150 and over; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shapes, hot rolled sheets, 400 to 14,999 lb.; Los Angeles, hot rolled sheets, bars, plates, cold rolled sheets, 300 to 1999 lb.; galvanized sheets, 1 to 6 bundles; cold finished bars, 1 to 99 lb.; SAE bars, 100 lb. Extras for size, quality, etc., apply on above quotations. *12 gage and heavier, $3.43. †Los Angeles, San Francisco and Seattle prices reflect special provisions of amendment No. 2 to OPA Price Schedule No. 49.

Stamping for Victory



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BROOKLYN · NEW YORK

BLISS

BOILER TUBES

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes
Minimum Wall
(Net base prices per 100 ft., f.o.b. Pittsburgh, in carload lots)

	Seamless Cold Drawn	Hot Rolled	Lap Weld, Hot Rolled
	$	$	$
2 in. o.d. 13 B.W.G.	15.03	13.04	12.38
2½ in. o.d. 12 B.W.G.	20.21	17.54	16.58
3 in. o.d. 12 B.W.G.	22.48	19.50	18.35
3½ in. o.d. 11 B.W.G.	28.37	24.62	23.15
4 in. o.d. 10 B.W.G.	35.20	30.54	28.66

(Extras for less carload quantities)

40,000 lb. or ft. over	Base
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%
10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

	Per Net Ton
6-in. and larger, del'd Chicago	$54.80
6-in. and larger, del'd New York	52.20
6-in. and larger, Birmingham	46.00
6-in. and larger f.o.b. cars, San Francisco or Los Angeles	69.40
6-in. and larger f.o.b. cars, Seattle	71.20

Class "A" and gas pipe, $3 extra; 4-in. pipe is $3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger is $45 at Birmingham and $53.80 delivered Chicago. $59.40 at San Francisco and Los Angeles, and $70.20 at Seattle.

RAILS, TRACK SUPPLIES

(F.o.b. Mill)

Standard rails, heavier than 60 lb., gross ton	$40.00
Angle bars, 100 lb.	2.70
(F.o.b. Basing Points)	*Per Gross Ton*
Light rails (from billets)	$40.00
Light rails (from rail steel)	39.00
	Base per Lb.
Cut spikes	3.00c.
Screw spikes	5.15c.
Tie plates, steel	2.15c.
Tie plates, Pacific Coast	2.30c.
Track bolts	4.75c.
Track bolts, heat treated, to railroads	5.00c.
Track bolts, jobbers discount	60-5

Basing Points, light rails—Pittsburgh, Chicago, Birmingham; spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo; spikes alone—Youngstown, Lebanon, Pa., Richmond

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans, Domestic, 80%, per gross ton (carloads) $135.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%	$36.00
Domestic, 26 to 28%	49.50

Electric Ferrosilicon

(Per Gross Ton, Delivered Lump Size)

50% (carload lots, bulk)	$74.50
50% (ton lots, packed)	87.00
75% (carload lots, bulk)	135.00
75% (ton lots, packed)	151.00

Silvery Iron

(Per Gross Ton, base 6.00 to 6.50 Si)

F.o.b. Jackson, Ohio $29.50*
Buffalo 30.75*
For each additional 0.50% silicon add $1 a ton. For each 0.50% manganese over 1% add 50c. a ton. Add $1 a ton for 0.75% phosphorus or over.
*Official OPA price established June 24, 1941.

Bessemer Ferrosilicon

Prices are $1 a ton above Silvery Iron quotations of comparable analysis.

Ferrochrome

(Per Lb., Contained Cr, Delivered Carlots, Lump Size, on Contract)

4 to 6 carbon	13.00c.
2 carbon	19.50c.
1 carbon	20.50c.
0.10 carbon	22.50c.
0.06 carbon	23.00c.

Spot prices are ¼c. per lb. of contained chromium higher.

Silico-Manganese

(Per Gross Ton, Delivered, Carloads, Bulk)

3 carbon	$120.00
2.50 carbon	125.00
2 carbon	130.00
1 carbon	140.00

Other Ferroalloys

Ferrotungsten, per lb. contained W, del'd carload	$2.00
Ferrotungsten, 100 lb. and less	2.25
Ferrovanadium, contract, per lb. contained V, del'd	$2.70 to $2.90†
Ferrocolumbium, per lb. contained Cb, f.o.b. Niagara Falls, N. Y., ton lots	$2.25†
Ferrocarbontitanium, 15-18 Ti, 7-8 C, f.o.b. furnace, carload contract, net ton	$142.50
Ferrocarbontitanium, 17-20 Ti, 3-5 C, f.o.b. furnace, carload contract, net ton	$157.50
Ferrophosphorus, electric or blast furnace materials, carloads, f.o.b. Anniston, Ala., for 18%, with $3 unitage freight, equaled with Rockdale, Tenn., gross ton	$58.50
Ferrophosphorus, electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., $3 unitage, freight equalized with Nashville, gross ton	$75.00
Ferromolybdenum, per lb., Mo, f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo., f.o.b. furnace	80c.
Molybdenum oxide briquettes 48-52 Mo, per lb. contained Mo, f.o.b. Langeloth, Pa.	80c.
Molybdenum oxide, in cans, per lb. contained Mo, f.o.b. Langeloth, and Washington, Pa.	80c.

*Spot prices are $5 per ton higher.
†Spot prices are 10c. per lb. of contained element higher.

FLUORSPAR

Fire Clay Brick

	Per Net Ton
Domestic washed gravel, 85-5 f.o.b. Kentucky and Illinois mines, all rail	$25.00
Domestic, f.o.b. Ohio River landing barges	25.00
No. 2 lump, 85-5 f.o.b. Kentucky and Illinois mines	25.00
Foreign, 85% calcium fluoride, not over 5% Ci, c.i.f. Atlantic ports, duty paid	Nominal
Domestic No. 1 ground bulk, 95 to 98%, calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines	$34.00
As above, in bags, f.o.b. same mines	36.40

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Per 1000
Super-duty brick, St. Louis	$64.60
First quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	51.30
First quality, New Jersey	56.00
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	46.55
Second quality, New Jersey	51.00
No. 1, Ohio	43.00
Ground fire clay, net ton	7.60

Silica Brick

Pennsylvania	$51.30
Chicago District	58.90
Birmingham	51.30
Silica cement, net ton (Eastern)	9.00

Chrome Brick

	Per Net Ton
Standard, f.o.b. Baltimore, Plymouth Meeting and Chester	$54.00
Chemically bonded, f.o.b. Baltimore, Plymouth Meeting and Chester Pa.	54.00

Magnesite Brick

Standard f.o.b. Baltimore and Chester	$76.00
Chemically bonded, f.o.b. Baltimore	65.00

Grain Magnesite

Domestic, f.o.b. Baltimore and Chester in sacks (carloads)	$44.00
Domestic, f.o.b. Chewelah, Wash. (in bulk)	22.00

ORES

Lake Superior Ores (51.50% Fe.)
(Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer, 51.50	$4.75
Old range, non-bessemer, 51.50	4.60
Mesaba, bessemer, 51.50	4.60
Mesaba, non-bessemer, 51.50	4.45
High phosphorus, 51.50	4.35

Foreign Ores*
(C.i.f. Philadelphia or Baltimore, Exclusive of Duty)

	Per Unit
African, 46-48 Mn	78c. to 80c.
Indian, 48-50 Mn	75c.
Brazilian, 46-48 Mn	81c. to 83c.
Cuban, 51 Mn	85c.
	Per Short Ton Unit
Tungsten, Chinese, Wolframite, duty paid, delivered	$24 to $26
Tungsten, domestic scheelite, at mine	$24 to $25
Chrome ore, lump, c.i.f. Atlantic Seaboard, per gross ton; South African (low grade)	$28 to $30
Rhodesian, 45	Nom.
Rhodesian, 48	Nom.

*Importations no longer readily available. Prices shown are nominal.

COKE*

Furnace

	Per Net Ton
†Connellsville, prompt	$6.00

Foundry

†Connellsville, prompt ..... $6.75 to $7.00

*Maximum by-product coke prices established by OPA became effective Oct. 1, 1941. A complete schedule of the ceiling prices was published in THE IRON AGE, Sept. 25, p. 94B. Maximum beehive furnace coke prices established by OPA, Jan. 26. †F.O.B. oven.

By-product, Chicago	$12.25
By-product, New England	$13.75
By-product, Newark	$12.40 to $12.95
By-product, Philadelphia	$12.38
By-product, Cleveland	$12.30
By-product, Cincinnati	$11.75
By-product, Birmingham	$8.50†
By-product, St. Louis	$12.02
By-product, Buffalo	$12.50

FUEL OIL

No. 6 Bur. Stsd., del'd Chicago	4.75c.
No. 3 distillate del'd Cleveland	6.50c.
No. 4 indus., del'd Cleveland	6.00c.
No. 5 indus., del'd Cleveland	5.25c.
No. 6 indus., del'd Cleveland	5.25c